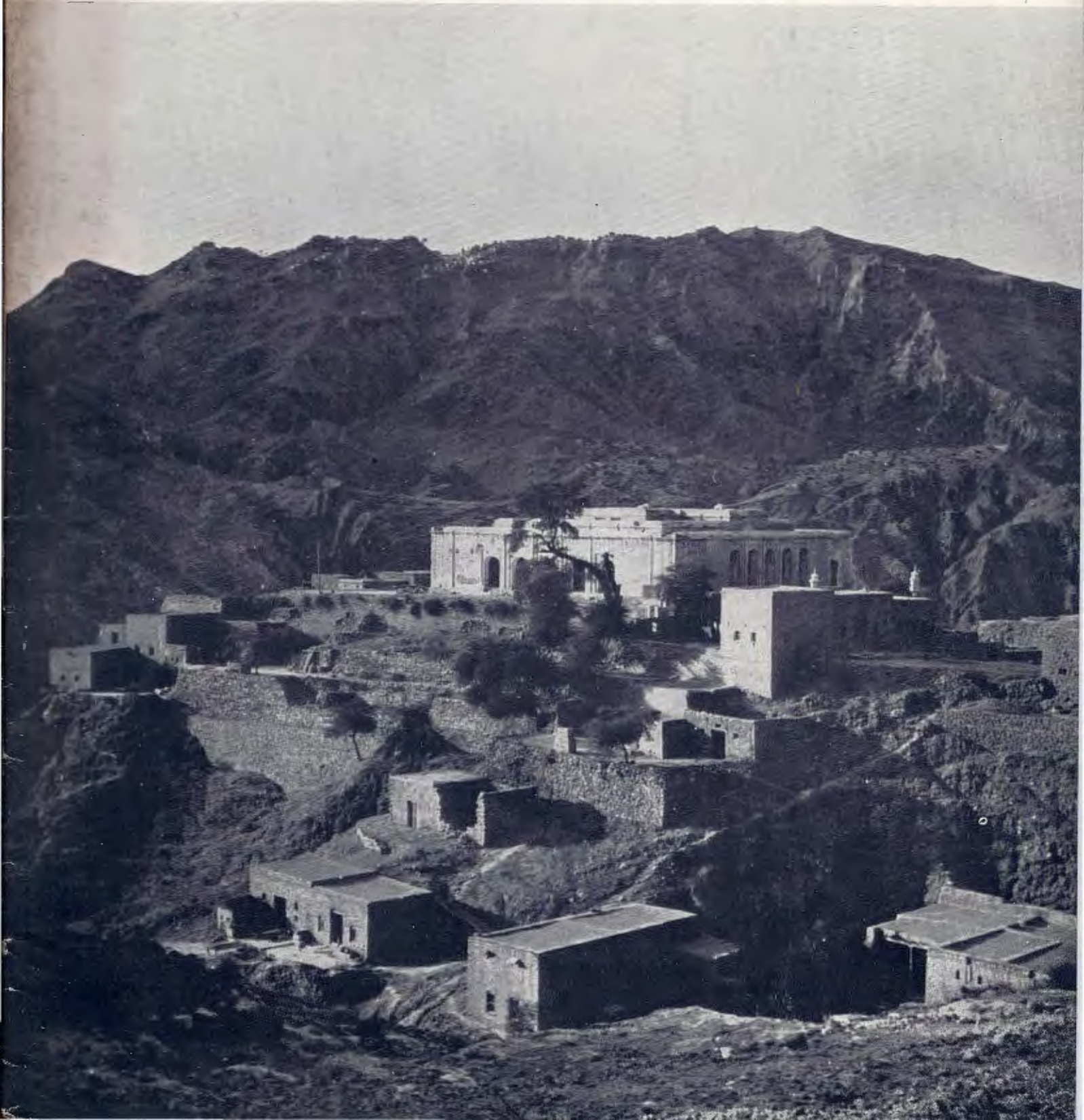




MAGAZINE

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THE I.C.I. MAGAZINE

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Front Cover: Salt-miners' Huts at Khewra, by B. R. Goodfellow.

The Editor is glad to consider articles for publication.
Payment will be made for accepted contributions.

OUR CONTRIBUTORS

F. H. PERKINS, *I.C.I. Education Officer, who writes on training for management, was a member of the Government Committee on Education for Management which published its recommendations in the form of a White Paper in 1947. This is the last of his three articles on I.C.I. training schemes.*

E. F. WOOD *has a long association with the dyestuffs industry. He joined Levinstein Ltd.—one of the constituent elements of the Dyestuffs Division—in 1915 and for many years was Plant Superintendent in charge of the manufacture of intermediate products. He is now Magazine correspondent and in charge of Dyestuffs Division's information services.*

RONALD FARQUHARSON, *I.C.I. Shipping Manager, is well known to readers. Drawing once again on his China experiences, he writes this time on Korea. A review by Sir Frederick Bain, I.C.I. Deputy Chairman, of his newly published book Confessions of a China Hand will be found in "Information Notes."*

CAPTAIN R. A. B. HARDWICK *joined I.C.I. in 1945 after demobilisation, and now commands temporarily the Nobel Division's M. V. Lady Anstruther. During the war he was a Lieutenant-Commander in the R.N.R. and won the Croix de Guerre at the Normandy landing. The remarkable episode of a rescue in the Arctic of which he tells occurred when Captain Hardwick was employed by the Hudson's Bay Company.*



The Synthetic

The surrounds of Khewra—the soda ash factory planned by Alkali Division—are an outstanding beauty. Where once there was a howling wilder the Salt Range, today green gardens and orcha

WHEN the Alkali and Chemical Corporation of India decided to erect a soda ash factory at Khewra, no nature-lover lifted up his hands in horror, for beauty and green fields never existed. All around Khewra were tracts of stony saline desert, with here and there a twig of camel thorn. A few trees and a small portion of cultivated garden at the Mayo salt mine bungalows added a little relief to the brown sombre desert and hills. Swinburne might well have had Khewra in mind when he wrote:

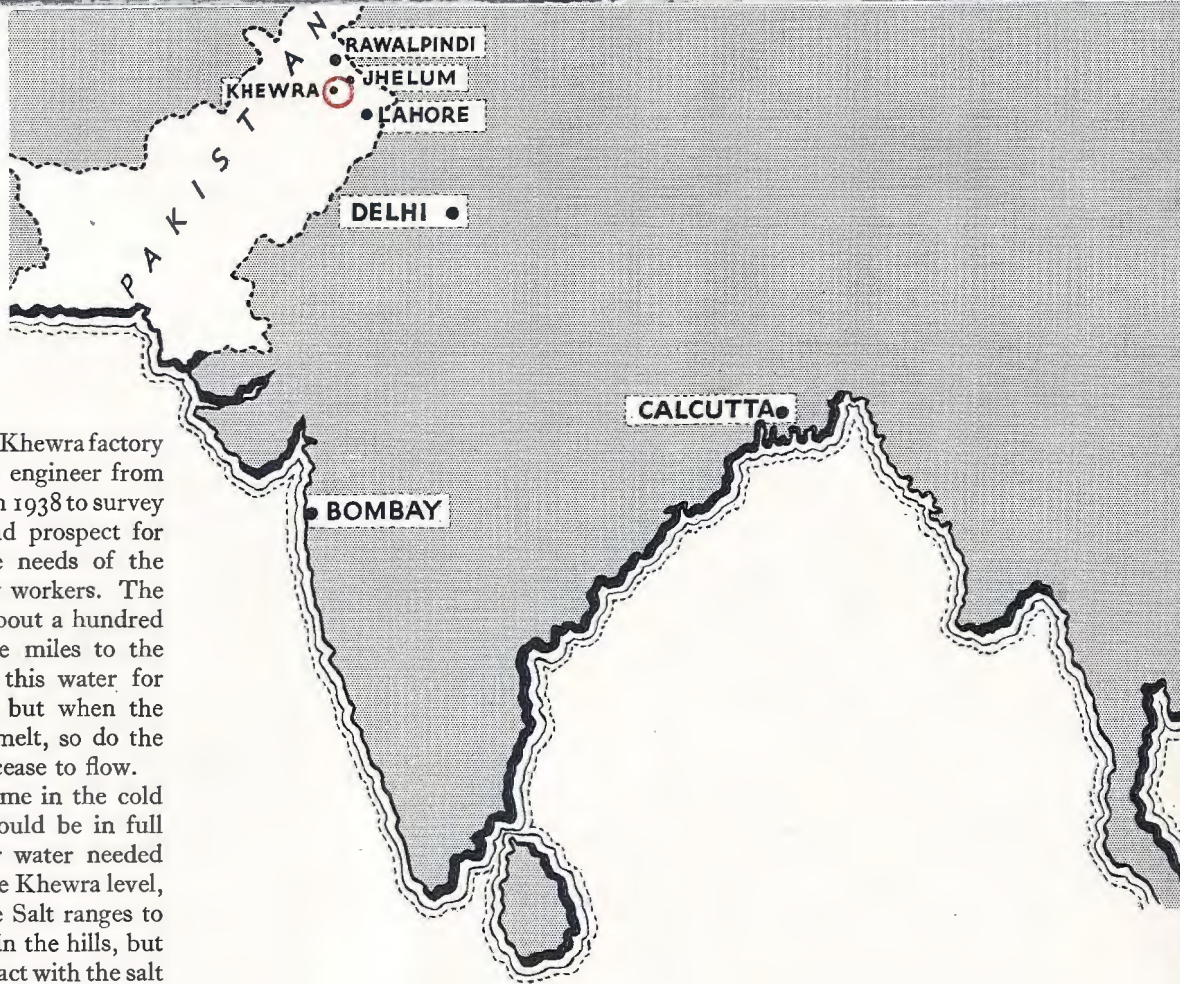
A land that is lonelier than ruin,
A sea that is stranger than death,
Far fields that a rose never blew in,
Wan wastes, where the winds lack breath.

Only those who have seen the wonderful change in the face of the desert in the few short years that A.C.C.I. have been operating at Khewra can realise how careful planning and initiative can produce beauty from ugliness and cultivation from desolation. Beautiful gardens have been laid out, trees give shade from the merciless sun, hygienic dairy farms and vegetable gardens provide workers with clean milk and fresh garden produce. A hospital has been built and malaria, cholera and smallpox, formerly responsible for many deaths in the district, have been brought under control. The standard of living has been raised immeasurably in what was a very backward area.



Oasis

in the hills of Pakistan
example of man-made
ness at the foothills of
rds encircle the works.



The machinery to erect the Khewra factory was set in motion by a civil engineer from Alkali Division who arrived in 1938 to survey the proposed factory site and prospect for a water supply to meet the needs of the proposed factory and factory workers. The river Jhelum, which flows about a hundred feet below Khewra and five miles to the south, could have supplied this water for many months of the year; but when the Himalayan snows cease to melt, so do the Jhelum waters dwindle and cease to flow.

As this seasonal decline came in the cold weather when the factory would be in full production, and as the river water needed powerful plant to raise it to the Khewra level, prospecting took place in the Salt ranges to the north. Water was found in the hills, but it was mostly saline after contact with the salt rock from which the ranges take their name. However, an abundant supply was at last discovered above the salt deposits at a place called Watli, some ten miles from Khewra and much higher, where the water flowed from a natural spring.

When war broke out in 1939, foundations for the Khewra

factory buildings and workers' dwellings were being laid. In 1940 administrative staff and engineers arrived from England. By this time, however, owing to the war, there was a serious shortage of essential building materials and machinery, and work was slowed up considerably.



(ABOVE) *Khewra factory gateway with*

(BELOW) *Muslim workers disposing of salt waste*



While the factory was being built, gardeners and coolies were levelling the ground for gardens to surround the new bungalows and masons were building irrigation channels which were linked with a swimming pool constructed on higher ground to the north of the factory. The swimming pool, intended as a spare reservoir for the boilers, is fed by excess water from Watli not required for factory and domestic purposes. It overflows into the irrigation channels constructed to convey water by gravity to all parts of the garden.

The desert did not yield to the change without a vigorous struggle. Hundreds of tons of rock had to be moved, and many times an innocent-looking stone, a few inches in diameter, was discovered to be a buried rock weighing several tons, with just one small portion protruding above ground level. These boulders were broken up and used for banks and road-making.

But the ground, levelled thus after a prodigious struggle, still remained useless for cultivation. Little or no soil could be seen—nothing but more and more stones. So hundreds of donkeys were mobilised to bring soil in panniers from the banks of the gorge below Khewra, where it had settled after being washed down from the slopes above. The thickness of soil required for the various plots differed with the lie of the land and the purposes for which the ground would be used. Grass plots did not require as much soil as vegetable plots. After months of hard work, grass began to grow, trees, shrubs and hedges began to flourish, and various citrus fruit trees, including grapefruit and oranges of good quality, began to take root. Holes three to four feet deep were dug and filled with good soil to make sure that the trees were not being



The terraced gardens for which all the soil had to be



The clubhouse for the staff, called Winnington Club as a tribute to Alkali Division



brought in panniers by donkeys from the valley below

planted on solid rock. Hard work, a plentiful supply of water and sunshine were showing dividends.

In 1942 the need was felt to keep cattle, not only to provide cleaner milk for Khewra residents, but also to supply organic manure for the estate. A number of pedigree Red Sindhi cows and a bull were brought to Khewra. Unfortunately none of the animals has ever come up to expectation, in spite of the fact that they are housed and fed under ideal conditions. A gallon per head each day is the approximate average from each milch cow. This, coupled with the fact that the animals do not come into production until they are nearly five years old, makes the dairy farm anything but a profitable proposition.

Early in 1947 grave concern was felt for the estate owing to a prolonged water shortage. Rainfall had been negligible for a considerable period and the flow of Watli water began to wane. The gardens became parched and scarcely enough water was available for factory and domestic needs. The avenue of cypress trees leading to the swimming pool withered and died, crops dried up in the blistering June heat. But finally the rains came in July and saved the fruits of seven years' hard labour.

The same year brought an economic crisis to Khewra. After the partition of British India into the independent dominions of India and Pakistan, Khewra found itself in Pakistan; and shortly afterwards the Sikh and Hindu workers, who held Khewra's key jobs, all left. Coal and coke could not be obtained and the situation was far from encouraging. However, it is an ill wind that blows no good, and when the factory was not working, the estate had an abundant supply of water and more men available for agricultural work. Then in August 1948, after the factory had been out of production



The swimming pool, for which the water comes from a natural spring ten miles away above the salt deposits of the mountains behind

for twelve months, came a further disaster. All communications were cut off by floods. This kept the factory out of production for five months, when new English technicians arrived to teach the Pakistanis to make soda ash.

Today Khewra looks optimistically to the future. The factory is working and hopes to continue in production. The health of the people has vastly improved, and malaria (al-

though a few cases still occur) has almost been conquered since the introduction of 'Paludrine.' The benefits of a modern hospital and methods of treatment are realised by the people. Periodic vaccination and inoculation prevent smallpox and cholera. First-aid schemes prevent sepsis.

The dairy will soon have a change of bloodstock and hopes are held for better milk yields. The ever-growing estate now covers upwards of twenty acres, with lawns, tennis courts, a football pitch, vegetable and fodder plots, rose gardens and flower beds, and a crown bowling green. Most of the English half-hardy annuals bloom from January to June after an October sowing. Wheat, maize and Egyptian clover are grown for cattle fodder. Potatoes, beetroot, cabbage, tomatoes and many Pakistan vegetables are grown for the works employees. Products of Plant Protection are used to keep vegetation free from disease and pests, and I.C.I. fertilizers help in the production of better plants.

Some of the young trees now tower to a height of forty feet, and the warm nights are filled with the scent of flowers. The ugliness which often goes side by side with industry has been for once eliminated, thanks to the people who planned the gardens and made vegetation possible. The desert is not home from home, but the fierce rays of the tropical sun lose much of their sting under the shade of the trees, and the glare is endurable when looking at green fields.



The cool gardens in which even the labrador is at ease

I.C.I. NEWS

SIR WILLIAM COATES

An appreciation by the Chairman

Having been closely associated with Sir William Coates throughout the length of his service with the Company, I have much pleasure in writing this appreciation.

Sir William's first connection with Nobel Industries was as Secretary, which position he held for just over a year, after which I.C.I. was formed; and for over twenty years he has been a director of I.C.I. Since 1945 he has been a deputy chairman.

Often when men with Sir William's long service retire it is on account of ill health; fortunately that is not so in his case. Recently he was appointed a deputy chairman of the Westminster Bank, of which he has been a director for many years past, and his economic and financial knowledge will enable him to make a valuable contribution in the problems always confronting a big bank.

To me, the severance of our business relations is especially sad; Sir William and I have been together now for twenty-five years, and with his going another link with the past, so far as I am concerned, is broken; but alas, we have all got to face the inexorability of time, and Sir William leaves I.C.I. with the greatest regret of my colleagues and myself, but with the hope that he has many years ahead of him still to contribute to the solution of the country's economic problems.

Sir William's capacity for work is really astonishing. While busy all the time in the discharge of his duties with us he has served on various Government committees, and I know from the ministers of the appropriate departments concerned how they valued his wide experience in the problems for their consideration. Among his outside activities were the following: Chairman of the Double Taxation Committee of the International Chamber of Commerce; Member of the Sugar Commission and Agricultural Marketing Facilities Committee; Chairman of a special committee to settle disputes between the Pig Marketing Board and the Bacon Marketing Board; Chairman of the Excess Profits Refunds Advisory Panel; Chairman of the Television Committee, 1949.

Sir William's activities have not only been confined to this country; he has, on behalf of I.C.I., travelled to Australia, America and Canada, and in those countries has done much to raise and uphold the prestige and standing of the Company. His views, advice and practical help have been much appreciated by our overseas companies.

It is not necessary to tell in detail, as that would take much too long, of the part he played in the Anti-Trust case in the States, but this involved almost six months' daily reading of

all the documents relevant to this lawsuit. In the witness box he was excellent, and in the latest summary of the United States' charges a very nice tribute was paid to him as follows: "Significantly, Sir William Coates, the author of the memorandum, was not questioned about it. The studiously eliminated language were the words of one of the leading businessmen of the British Empire, a man of extraordinary understanding, sagacity, and competence, as he demonstrated on the witness stand." What a compliment!

Sir William's enthusiasm is amazing: he is tireless, and throws himself heart and soul into all he tackles. His whole attitude to life and his advice to the young have been, and still are, to acquire as much knowledge as possible and work hard; he believes in thoroughness in this quest, and that nothing is better or more satisfying than knowledge gained by individual effort and curiosity. In his opinion the results of study should be committed to paper or propounded, as only in this way is a subject completely mastered. He is certainly a good example of his own preaching, as his interests are many and varied. He has an enquiring mind and an alert and active brain, which I always maintain is the healthy brain, ever keen and ready to enter fresh fields. Possibly this appreciation and enjoyment of a life lived fully accounts not only for his youthful looks but for his youthful spirit.

Sir William does not believe in all work and no play, and is a very keen golfer, which game has helped to keep him so fit; at one time I could beat him, but not now! Among his other relaxations are a love of chamber music and reading.

Sir William is a very human person, a man with a sense of humour—a very great asset—who is most approachable and sympathetic when asked for advice, help or sympathy, and these are the qualities which endear him to all with whom he comes into contact.

He will be greatly missed by his colleagues on the Board, by the staff in Head Office, and by our Divisions, but our best wishes go with him at the closing of one chapter and the opening of a new, which we hope will prove to be a long and interesting one.

HEAD OFFICE

Association of British Chemical Manufacturers

At the monthly meeting of the Association of British Chemical Manufacturers on 9th October Sir Frederick Bain, M.C., a deputy chairman of I.C.I., was elected an honorary

vice-president of the Association. This is the highest honour the Association can confer. There are only two other honorary vice-presidents of the Association—Lord McGowan; and Mr. Norman N. Holden, who was a signatory member when the Association was formed in 1916.

Sir Frederick, who has been a member of the Council of the Association since October 1928, was elected vice-chairman in October 1945. In the normal course of events he would have become chairman in October 1947, but by then he had been elected president of the Federation of British Industries, and he asked to be released from the chairmanship of the Association of British Chemical Manufacturers to accept this more important post.

Mr. W. F. Lutyens, the I.C.I. Main Board director responsible for the Heavy Chemicals Group, has been elected vice-chairman of the Association. He was elected a member of the Council of the Association in October 1937, and was on the steering committee which prepared for the President of the Board of Trade the *Report on the Chemical Industry*, 1949.

Sir Wallace Akers opens New Laboratory

When opening the new extensions to Plant Protection Ltd.'s laboratories at Yalding, Kent, on 17th October Sir Wallace pointed out that some idea of the magnitude of the problem of fighting insects was shown by the fact that about 700,000 different insect species have been identified in the world up to the present and that new ones are being identified at the rate of about 7000 per year. It was true that only a proportion of these attack plants, but every year very large quantities of vegetable foodstuffs were either prevented from growing or were destroyed by vegetable pests, which included insects, fungi and weeds, so that the work of preventing this destruction was of vital importance, especially in view of the statement by Lord Boyd-Orr that the population of the world was increasing so quickly that, unless the production of foodstuffs could be greatly increased, there would be insufficient to support the population, possibly before the end of this century.

He described the liaison between Plant Protection Ltd. and I.C.I. All new chemicals produced by the manufacturing Divisions of I.C.I. which were thought to be of possible use in the control of plant pests, diseases or weeds were sent to the I.C.I. research stations at Hawthorndale or Jealott's Hill for testing. The most promising were subjected to more extensive tests at these research stations or at the Plant Protection station at Fernhurst so that the data necessary for the preparation (or formulation, as it is called) of these compounds for actual use could be provided to the Plant Protection establishment at Yalding. In the laboratories in the latter station the necessary research was carried out, often in conjunction with I.C.I. Divisional research laboratories, to enable suitable formulations to be devised. The testing and demonstration of these would then be carried out at Fernhurst or at Jealott's Hill.

In the new laboratory block at Yalding Plant Protection had a new and enlarged analytical laboratory for factory control, a chemical laboratory for formulation work, and a completely equipped semi-works scale laboratory for the manufacture of new formulations in sufficient quantities for large-scale field testing. The block also contained space for the library and offices.

ALKALI DIVISION

Mr. D. V. Reddrop

It is with the deepest regret that we record the tragic death of Mr. D. V. Reddrop, Deputy Chief Accountant of the Alkali Division, while in the prime of life. During the early morning of Saturday, 21st October, Mr. Reddrop was a passenger in a motor-car which was involved in a collision with a van. He received injuries which finally caused his death a week later.

Mr. Reddrop's detailed and accurate knowledge of the Division's accountancy system brought him into contact with all departments. His quiet and unassuming manner, his helpfulness, and the ready way he made the fruits of his experience available to others earned him many friends throughout the Division. In particular, members of the technical staff will remember the patient and helpful manner in which he dealt with the accountancy side of their many savings statements. He was the management representative of the Accountancy Department Staff Committee from the beginning and was also a Company's representative on the Staff Benevolent Fund Committee.

In his younger days Mr. Reddrop was a member of the Northwich Rowing Club and of the Victoria Social Club. He was also a keen golfer until an unfortunate accident at golf lost him the sight of one of his eyes. Of late years his home and family were perhaps his chief interest outside his work. Our deepest sympathy goes out to his wife and only son in their irreparable loss.

Mr. Albert Cooper

A link with the original founders of Brunner, Mond & Co. is broken with the retirement of Mr. Albert Cooper (Caustic Finishing, Packing and Loading Foreman) after 49 years' service. As a boy he used to run errands for Dr. Ludwig Mond and bring cold lunches from Winnington Hall when Dr. Mond was working on the Bleach Plant and Power House.

After entering the employ of Brunner, Mond & Co. in 1901 Mr. Cooper worked at a variety of jobs before being appointed a foreman in 1948. In his early years he was a keen bowls player and won many honours with various clubs in the district. Mr. Cooper's father was also employed by the Company. He started work in 1883.

I.C.I. Scholars Sail for America

Mr. A. D. Sharp (Engineering Dept.), who was awarded an American Universities' scholarship earlier this year, has now sailed for America to study at the Georgia Institute of Technology. He was unable to leave earlier, as there was no suitable vacancy in a university for him.

Mr. B. Rydz (Engineering Dept.) has also been awarded a scholarship, and sailed in the *Queen Mary* on 7th October.

BILLINGHAM DIVISION

Mr. Sam Ellison

Mr. Sam Ellison, who has just retired as 'Drikold' Plant Engineer, has had four presentations within the last few months.

Last April Mr. Ellison received his clock for 40 years' service, the third received by the Ellison family from the Company. On his last day at Billingham, Mr. Zealley (Division

chairman) handed him a cheque on behalf of Billingham staff. The ladies of Ammonia Works then presented him with an inscribed cigarette lighter. But the gift of which Mr. Ellison is most proud is one which shows the esteem in which he was held by the men who worked under him. Before he left, Chargehand Jack Leak presented him with a coffee table, which had been subscribed for by the workers in the 'Drikold' Plant.

Mr. Ellison's early career was spent at Runcorn with United Alkali, and he came to Billingham in 1922. Actually he can claim to be one of the pioneers, for he worked at Runcorn on No. 1 Unit, which was the prototype of the Billingham Ammonia Plant. Incidentally, he also worked on the first South African ammonia unit, and went to Modderfontein in 1931 to assist in the erection and start-up.

Mr. Ellison's father (the late Mr. Joe Ellison, of Runcorn) served for 52 years, and two brothers-in-law have each more than 40 years' service to their credit.

Christmas Treat for I.C.I. Children

Nearly 8000 children and parents will be treated to Christmas parties or a pantomime by the Division social activity stations this season. Those works which are treating the children to a pantomime show have booked seats for *Cinderella* at the Globe Theatre, Stockton. Altogether 3716 bookings have been made. The Gas and Power Works alone have booked seats for 1300 children and parents.

Works social stations are run by the men themselves. Money is raised for children's Christmas parties and summer outings by various means, and the proceeds of works concerts and socials during the autumn and early winter all help to give the children a Christmas treat.

DYESTUFFS DIVISION

Roller Skating Champions Engaged

Miss Joan Atkinson, who is a 20-year-old statistical clerk in the Division Engineering Department of Dyestuffs Division, has become engaged to her roller-skating partner, Mr. Donald Stirling. Together they hold the National Skating Association Gold Figure Skating Medal and have represented Great Britain in amateur international championships since 1946.

In the European championships they were fifth in pairs at Antwerp in 1946; third at San Remo, Italy, in 1948; and fifth at Wembley in 1950. In world championships they were fourth in pairs in 1947 at Washington, U.S.A., and second both in pairs and dance at Barcelona in 1949.

In the British championship competitions Miss Atkinson was runner-up in 1949. With her partner Mr. Stirling (British champion since 1946) she has been runner-up in pairs every year since 1947. Miss Atkinson also won the Devonshire Park Bowl in 1947, 1948 and 1949. Competition for this trophy, which is judged on figure skating, is open to all, both men and women, except those who have won the British championship.

Miss Atkinson first started to make casual visits to a skating rink with school-friends just over nine years ago. She quickly became a good skater and acquired world championship status with unusual rapidity. Her first success came in 1946, when she was chosen to represent Great Britain at Antwerp after her performance in national trials at Leeds. She joined Dyestuffs Division eighteen months ago.

In her leisure time Miss Atkinson spends, at the moment,



Miss Joan Atkinson and Mr. Donald Stirling

four evenings a week practising for the 1951 championships with her partner at Birch Park skating rink, Rusholme, Manchester. They hope to be chosen to represent Great Britain—for the sixth time—in the world's championship at Milan next June.

Dr. E. E. Walker

One of the world's first chemists to deal with synthetic fibres, Dr. E. E. Walker, who started his employment with British Dyestuffs Corporation Ltd. twenty-four years ago, retired from the Company's service at the end of September.

Dr. Walker was educated at Malvern and the City and Guilds Central Technical College, London. He carried out post-graduate research with Britain's "grand old man of science," H. E. Armstrong.

Before 1914 he was in charge of Courtauld's experimental plant at Bocking for viscose rayon manufacture. With the outbreak of war he was seconded to the Ministry of Munitions and later placed in charge of the research station of a general ammunition filling department at Aintree. After a period as chemist at Crosfields, Warrington, where he worked with E. F. Armstrong (who later became managing director of British Dyestuffs Corporation Ltd.), he became chief chemist at the Indian Ordnance Department and ultimately Professor of Chemistry at University College, Colombo.

On his return to this country Dr. Walker undertook research on synthetic plastics. This work was the starting-point of his great interest in plastics and polymers, an interest which

lasted throughout his career. In 1926 he joined British Dyestuffs Corporation Ltd. at Blackley and became head of the Synthetic Resins Section. He was responsible for the development of manufacture of alkyd resins for paints and varnishes, and has been connected with many developments of the Company, including 'Perspex' and 'Velan.'

Dr. Walker has always maintained keen interest in his hobbies of photography and music. He was one of the early exponents of colour photography and can proudly show a colour transparency taken and processed by himself about 1909.

I.C.I. Men in Productivity Team

I.C.I. is represented by three members of Dyestuffs Division in the team of ten men which left this country last month for a six weeks' visit to the United States under the auspices of the Anglo-American Council of Productivity to study the preparation of pharmaceutical products for the market.

The I.C.I. men are Dr. James Brennan (Superintendent in charge of pharmaceutical processing at Regent Works, Linlithgow), Mr. W. T. Irving (a fitter chargehand at Regent Works and a member of the A.E.U.), and Mr. Harry Smith (a section leader draughtsman in the drawing office at Hexagon House, Blackley).

GENERAL CHEMICALS DIVISION

Long Service Records of Widnes Families

In his Centenary greetings Mr. G. K. Hampshire (Division chairman) expressed the opinion that it was doubtful whether any industry could show as many examples of continuous family service as were to be found in our Widnes Works. He cited one family—the Stevens family—whose record of service was 216 years.

Recently the records of a number of other families have been turned up, and although there are unfortunately many gaps which cannot be filled there is plenty of evidence to support the Division chairman's opinion.

The family of Thomas Minton is a fine example. He himself, born in 1838, came at the age of 21 to Widnes, where, among other jobs, he worked with stonemasons on the coping of Birchfield House, now one of our staff hostels. He entered the chemical industry as a processman at Gaskell-Deacon Works and later moved to Sullivan Works, where he became first a foreman and later works manager. He ultimately retired after close on fifty years' service.

Ten of his sons and grandsons have served in our Widnes Works. Notable among them are Thomas, who retired twenty years ago after 46 years' service as a fitter, foreman and works engineer; Albert John, Plant Manager at Muspratts', retired two years ago with 47 years' service; Harold Percy, now Instruments Manager at Pilkington-Sullivan Works; Walter, foreman fitter at the same works; and Thomas Hosker, now Deputy Regional Manager, Northern Region. Altogether the members of the Minton family have a combined total service of nearly 350 years.

Then there is the family of James Traynor. This throws us back to the earliest days of the Widnes chemical industry, for the original James Traynor claiming to have worked the first black-ash revolver at the old Desoto Works. Fourteen of his sons, grandsons and granddaughters have put in more than two hundred years' service, and several of them are still at work.

Another outstanding family is that of Thomas Wright Halfpenny. Born in Shropshire in 1886, he came to Widnes twenty years later and had become a foreman at the age of 22—a remarkable achievement. This family's record of service is 240 years.

Of the many other families with long connections with the Widnes works, two can be picked out almost at random—that of John Quinn, with a total service of nearly 200 years; and the family of Thomas Daniels, whose four sons and two



The Stevens family, whose record of service totals 216 years

grandsons have brought the family's period of service to 180 years.

It will be observed that the aggregate service of six families whose records have been cited—the Stevens, the Mintons, the Traynors, the Halfpennys, the Quinns and the Daniels—totals almost 1400 years.

There are many other families, notably those of Henry Burgess (born 1833) and Thomas Lomax, which have perhaps even longer records of service, but, unfortunately, their records are incomplete. However, five of Henry Burgess's six sons and 21 of his 60 grandchildren have worked with us; and Thomas Lomax headed a succession of six sons, seven grandsons, six great-grandsons and a great-great-grandson who were to serve in our Works.

PAINTS DIVISION

Works Council Innovation

A problem facing works and staff councillors is how to report adequately to their colleagues on the work done and on the decisions taken by the councils. Minutes of council meetings are published on the notice-boards, but it is very doubtful whether they are more than glanced at. And yet unless everybody in a Division has a clear picture of what the works and staff councils are doing, what service they perform, there is a danger that these institutions will become ineffective as instruments of joint consultation.

To help in "bringing home" councils to employees a "strangers' gallery" has been instituted at Paints Division council meetings. Under this scheme two or three employees are nominated by the management to sit in at particular council meetings, to listen to the proceedings, and then to go back and tell their colleagues all about it.

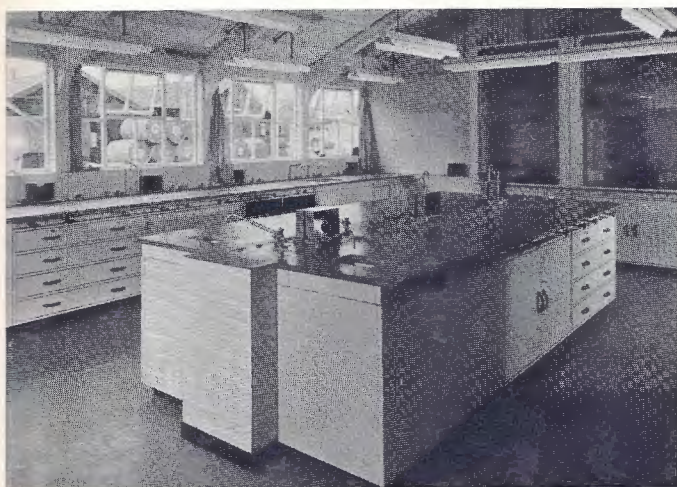
Recently Mr. G. T. Hateley and Mr. A. J. Lawrence, of Smethwick factory, attended a council meeting under this scheme.

PLASTICS DIVISION

New-type Laboratory

A new-type "flexible" prototype laboratory for the Plastics Research Department has been designed and built by Plastics Engineering Department in conjunction with Holoplast Ltd. In the "flexible" system of construction, already widely adopted in America, the main walls of the building form a shell which is divided into rooms by movable partitions. The advantage of this type of construction is the ease with which the interior may be rearranged to meet changing circumstances.

Based on a four-foot "module" or unit of dimension, the new laboratory, together with its ancillary rooms and offices, has been so designed that the size of the rooms can be easily altered—laboratory and offices are, in fact, interchangeable. Service units, cupboards, drawers, sinks and fume cupboards are interchangeable as well, and the laboratory may be enlarged or reduced or completely rearranged with the minimum interference to the work in progress. Furthermore, it is unnecessary to call in joiners, plasterers and painters to make the alterations.



A new laboratory finished with 'Holoplast'

After a number of tests to find a suitable material 'Holoplast' was chosen, for both furniture and partitions. Its resistance to chemicals and freedom from warping make it particularly suitable for laboratory benches, cupboards and drawers. When used for partitions it can be filled with sound-insulating materials, and its hollow construction enables electrical wiring to be concealed.

Woman wins Fish-of-the-month Prize

The distinction of being the first woman to win a prize in the 'Luron' Angling Competition has been gained by Mrs. E. R. Henson of Poole in Dorset. Mrs. Henson's catch, a fine bass scaling 12 lb. 4 oz., won her the first prize of £20 in the September section of the competition. Mr. A. E. Pidgeon, of Ongar, Essex, was a close runner-up, gaining the second prize of £5 with an 11 lb. 6 oz. bass.

Mr. J. H. Williams

Mr. J. H. Williams (Jimmie), who during the war worked under the late Lord Melchett in developing anti-tank weapons,

retired on 30th September after completing fifty years in industry. A precision engineer, he became interested in plastics materials as long ago as 1924, when as works manager of a company making aircraft instruments, he tested some of the first batches of phenolic moulding powder brought into the country from the U.S.A.

He joined Mouldrite Ltd. in 1933 and ran their Technical Service Department from Thames House, Nobel House and Croydon in turn. He was transferred to Welwyn when the Technical Service and Development Department was established in 1941. During the war Mr. Williams was seconded to Lord Melchett's department, working on special weapons. With Major Hodgkin he became joint patentee of a new type of anti-tank weapon, the prototype of which was produced with great speed.

Jimmie, as an engineer of much experience, was always willing to explain to newcomers (even to chemists) the intricacies of the moulding industry. He discovered in 1946 an accelerator for phenolic moulding powders which has since been covered by world patents.

Those who came in daily contact with him will much miss his great good humour, and his love of an argument.

REGIONAL NEWS

Dyestuffs Rushed to Save Lives

When the mining disaster took place at Knockshinnoch in Ayrshire last September, in which thirteen miners lost their lives, I.C.I. was asked to provide 14 lb. of the dyestuff 'Fluorescine' LTS to help trace the flow of water into that section of the mine in which men were trapped. This request was telephoned to the Glasgow Office at 5 p.m. on 13th September, asking for 14 lb. of the dyestuff to be put on the first train from Manchester the following morning.

It was not possible to contact Blackley that evening, but a telephone message was passed to them at 9.15 a.m. on the following day and efforts were made to catch the 9.50 a.m. train from Manchester to Glasgow, which was to have been met by Dr. Currie of the National Coal Board. Owing to the short time available it was impossible to have the parcel at Manchester in time, so Dyestuffs Division arranged for the material to be sent to Glasgow in a private car, which left Manchester at 10.40 a.m.

The parcel was addressed to the National Coal Board at 6A Barnes Street, Ayr, but this address was subsequently found to be wrong, the colour being required at the pit-head at New Cummock. On learning this at 11.35 a.m. the Glasgow Police Department were contacted, and at 2.30 p.m. the driver of the car was intercepted by the Carlisle Police and given the necessary instructions, which resulted in the parcel being delivered at the colliery at 4.30 p.m. The colour was actually in use at 5.15 p.m.

The National Coal Board have expressed their thanks to all concerned for the fine teamwork in I.C.I. which enabled the material to be quickly used in this matter of life and death.

WILTON WORKS

Mr. L. H. Barker

The sudden death of Mr. L. H. Barker while playing table tennis removes from the Wilton scene one of its most colourful personalities and a very capable engineer.

Bill Barker went to Billingham in September 1926 and later

served with the Lime and General Chemicals Divisions. He was Works Engineer at the Hillhouse war gas factory during the war and was one of the original members of the team appointed to develop the Wilton project. A tremendous zest for life and fearless intellectual honesty were his outstanding characteristics, but his closest friends will remember equally well his courage, generosity and sympathetic understanding.

Up to the age of 14 Bill Barker was an enthusiastic violin player and practised long hours, but a serious motor-cycle accident cut short his career as an executant musician and also robbed him of confidently expected Olympic honours as a high-diver. Instead he went up to Cambridge in 1923 with a scholarship, won in an open competition sponsored by the Institution of Civil Engineers, and took a first in the Mechanical Sciences Tripos. His great pastime was flying. He qualified as pilot of both powered and glider craft, was the holder of the coveted "Silver C," and at the time of his death was chief instructor to the Yorkshire Gliding Club at Sutton Bank. Amid all this activity he also found time to be a keen shot and in addition played regularly for the Wilton Table Tennis Club, of which he was chairman.

Two years ago he married a member of the Wilton staff, Miss Ray Battle, who survives him.

I.C.I. (MALAYA)

Norwegian War Medal Award

An unusual ceremony took place aboard the Norwegian ship *Talabot* in Singapore harbour on 16th October. The commanding officer, Captain Toft, acting as emissary for King Haakon of Norway, awarded the Norwegian War Medal to Mrs. A. I. Harris, a member of the secretarial staff at the Singapore head office of I.C.I. (Malaya).

New I.C.I. Offices in Malaya

The foundation stone of the new I.C.I. (Malaya) office building in Ampang Road, Kuala Lumpur, was laid on 29th September by Mrs. Cutler, wife of the chairman of I.C.I. (Malaya).



Laying the foundation stone of the new Malaya offices

The new building, which will cost 400,000 Malay dollars (£46,000)—for its size the most expensive building erected in the Federal capital within recent years—will be of reinforced concrete with panelling in brickwork and glass bricks. It is two storeys high, with a mezzanine floor in two parts of the building. Air conditioning is a special feature. Some of the flooring will be of cork, and partitions will be of 'Holoplast.'

Photographic Competition Results

More than 200 entries were submitted by 72 competitors for the *Magazine* photographic competition. Mr. C. R. Wormald, manager of the Kynoch Press Photographic Studio in London and last year's president of the Institute of British Photographers, who judged the competition, has awarded the prizes as follows:

1. Mr. Charles P. Gilmour (Trafford Park Works, Dyestuffs Division), for his picture "Airy Fairy."
2. Mr. Syd Yarwood (Alkali Division), for his picture "Delamere Forest, Near Northwich."
3. Miss E. M. Attwood (Agricultural Research Station, Jealott's Hill), for her picture "The Olperer Glacier from Padana, Austrian Tyrol."

Fourteen other entries were highly commended. Mr. Wormald states that the quality of the photographs submitted was high and the winners up to the best amateur photographic competition standard.

Prizes are £3 for the winner, £2 for the second and £1 for the third. In addition 10s. 6d. will be awarded for every photograph published. The winning photographs and many of the highly-commended ones will be published in the February issue.

THE JANUARY MAGAZINE

The I.C.I. Shot Tower at Edmonton, near London, where shot is still made by the 150-year-old process of pouring molten lead through a sieve at the top of a high tower, is the subject of our main article. The globules of lead as they descend through the air form themselves into round pellets of shot by the time they hit the water tank 160 feet below; and Mr. C. R. Wormald has taken some fine camera studies of the men working this process. This article is followed by the first of a series of three, tracing the history and development of some of our overseas companies. The story of the rise and growth of African Explosives and Chemical Industries Ltd. is described with the aid of some interesting old photographs of the pioneering days. These have been specially sent over for the *Magazine* from South Africa.

Of our other three articles, one is of unusual interest. Dr. N. G. Marr, Metals Division Medical Officer, has written a very entertaining reminiscence of Bernard Shaw. Dr. Marr was ship's doctor on board the *Empress of Britain* in the winter of 1932-3 when Bernard Shaw travelled round the world on board this ship. He contributes a most vivid sketch of Shaw's lovable and high-spirited nature. Our other two articles are both written by old servants of the Company. L. H. F. Sanderson, a contributor of long-standing, writes of his experiences as a rugby referee. Many of the big matches at Twickenham have been refereed by him. And Mr. James Golder, Works Engineer at Ardeer, looks back on his wild-fowling days in the marshes of Macedonia in 1918.



A typical scene on a Plant Managers' Course. This picture is of Plastics Division plant managers on their three weeks' course at Darwen, Lancs. Mr. T. V. Keelan, the chief instructor, leads a discussion.

TRAINING FOR MANAGEMENT

By F. H. Perkins (I.C.I. Education Officer)

Can training help a manager? Or are the most important qualities innate? I.C.I. Education Officer here gives his views on this difficult question, and discusses the post-war efforts of the Company to provide training courses for management.

IT is with a certain diffidence that I add to the volumes that have been written and the papers that have been read, particularly in the last few years, on the subject of Training for Management. Such a task causes me to examine my own credentials in relation to the subject and to challenge my own maturity of thought and conviction. I am not wholly satisfied with the answers that are forthcoming in either of these matters, but in view of the fact that I am concerned with the provision of training activities that have a bearing on this matter I must attempt, first of all, to explain my own line of thought and then to refer briefly to the extent

and nature of some of the training activities which the Company provides.

The terms "management" and "managers" are used very loosely in the English language, and for the correct understanding of this article it is essential that their meaning in the present context should be absolutely clear. Nowadays "management" is often used in reference to a body of senior people in a company who carry high-level responsibility for the day-to-day conduct of the company's affairs, but it is not in this sense that I wish to use the term here. All who carry responsibility for the work of others, however few, must

pursue, to a greater or lesser degree, an activity that we can call—for want of a better term—the function of management, and it is in this sense, and in this sense alone, that I use the terms “management” and “managers.” I am, in fact, inviting thought on how training in any form may help to develop the leadership qualities and abilities of all those in our organisation—on whatever rung of the ladder they may be—who are called upon to achieve their results through the people they supervise.

What are the qualities we expect to find in a good manager? Many attempts have been made to enumerate them, but most of the definitions I have read have left me with the feeling that “Solomon in all his glory was not arrayed like one of these.” On the other hand, it must be emphasised that at no time in the industrial history of this country has the need been so great as it is today to define the essential requirements of a good manager, and to ensure that only those who show promise of meeting these requirements climb the management ladder.

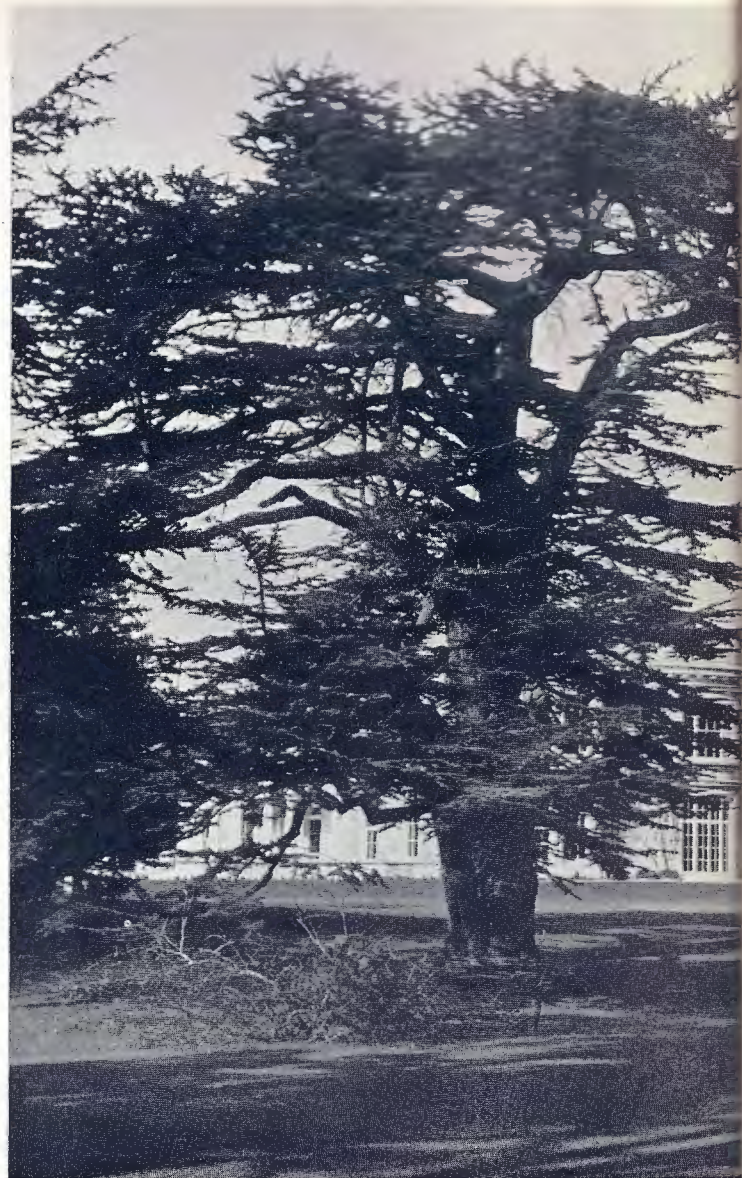
A manager—whether he is a head of a section, department or works—must possess a certain knowledge and skill in the operations with which his people are concerned; the extent of this requirement is governed by a number of factors. When knowledge and skill are deficient, or where development of existing knowledge and skill is required in preparation for further responsibilities, training can find an answer. A variety of our training courses in I.C.I., such as the Plant Managers' Courses, or courses for those concerned with supervision in offices, are designed at least in part for this particular purpose.

Although we must not underrate the importance to the manager of the necessary knowledge and skill, there is a more vital aspect to his work, and that is his ability as a leader of men. There is no substitute for real leadership ability, and the results achieved by able leadership can be more far-reaching than those produced by any other means.

Many personal experiences have brought this lesson home to me. Some years ago, for instance, a certain manufacturing company with which I was concerned had been in the doldrums for quite a time. Morale was low, manufacturing costs and labour turnover were high, and the outlook was bleak. Within a relatively short time the organisation was brought to life, imbued with a spirit of achievement and development and, in due course, converted into a profitable enterprise, by the arrival of a new manager. His background surprised us all; he had left school of his own accord at the age of 14, served his early years in the Merchant Service and, at a relatively youthful age, acquired his master's certificate. Only a relatively short experience in a similar business activity intervened before this new appointment. There will be many ifs and buts in any discussion of a case of this character, but there can be no dispute regarding the importance of the innate qualities that will enable a man to achieve these results despite the lack of extensive professional knowledge and skill.

If there were no difficulty in finding men with these innate qualities, we could point to the simple answer of good selection followed by sound experience on the job. Such a solution, if it were generally practicable, would take us a very long way, for experience under a good boss is probably the most effective management training programme.

But no industrial community has ever attained this state of perfection, and it has long been realised that the commonly held theory, that men either possess these innate qualities of leadership or they do not, is an over-simplification of the case.



A view of Greenlands, near Henley-on-Thames, where a three-monthly and Government administrators. The Staff College started it in 1948 and I.C.I., who contributed towards the costs. Some sixty per

The vast majority of us lie in some intermediate position, and it would be a sad state of affairs indeed if we held the view that development was not possible. Although I recognise the fact that it is no more possible to learn to be a good manager by reading and listening to speeches about it than it is to learn to swim before going into the water, I must add that, once you are in the water, the advantages of good coaching can never be in doubt.

For those in the Company who carry supervisory responsibilities, or are about to be called upon to do so, we have developed very widely, as a form of initial coaching, the Job Relations programme. This programme deals with the relationships between anyone carrying supervisory responsibility and those whom he or she supervises, and it attempts to relate certain basic principles with actual working situations. The underlying theme is that people must be treated as individuals; the supervisor must know his people as individuals, and they, in their turn, must realise and appreciate this from



(Photo by Felix Fonteyn, reproduced from Progress, the magazine of Lever Bros. & Unilever Ltd.)

industrial course is held three times a year for the training of managers as a result of the initiative of a group of leading industrialists, including people attend each course nominated by their respective firms.

the very outset of their association. The programme draws attention to the fact that while the leader's constant aim must be to create a team spirit, the best efforts of the group will only be achieved if he makes the best use of each individual's ability. He must always remain on the look-out for ways and means by which he can use the ability that is available to him. He must be prepared, often at considerable inconvenience to himself, to facilitate the promotion of those who merit advancement. He must recognise in appropriate ways the efforts and good work of his own people, particularly in instances of unusual or extra performance, and he must not fail to let each person know how he stands and what progress he is making. Deficiencies and failures must be handled and discussed in a way that brings out the best efforts for improvement.

Simple and elementary as this code of good leadership may appear, the programme illustrates, by discussion of actual problems, that successful application of these principles necessitates the highest order of leadership ability, and pro-

vides an effective incentive to better work. The programme emphasises that, however well these ideas may be applied, problems of human relationships will always arise, and must be dealt with objectively.

Short courses that certain Divisions have developed in the last year or so for plant managers, superintendents and engineers pursue further objectives. It is recognised that an understanding of the Company's policies and methods, in addition to certain management techniques, is an important part of a manager's qualifications for the proper handling of his job. These courses include talks by senior members of the Division staff as well as discussions on aspects of leadership which develop the general theme of the Job Relations programme. They may last from two to three weeks, and in certain cases form part of a longer period of planned experience in the works.

In addition to these Division activities, the Company has organised in London during the last three years courses of approximately one week. Lectures are given and discussions are held on a variety of subjects that concern the Company as a whole. These courses have now been attended by over 500 staff, drawn from all Divisions and Regions, and include talks by directors and other senior executives of the Company. A high-spot of these courses is the evening set aside for an open discussion with one of the Main Board directors, when no questions are barred and the discussion takes place in a free and informal atmosphere. Activities of this character develop mutual understanding, resolve doubts and enable managers subsequently to pursue their jobs with more confidence and a greater realisation of their responsibilities.

A relatively small number of senior managers have had the opportunity of attending the three months' course at the Administrative Staff College at Henley. This college, which is sponsored by industry, was opened in March 1948. Normally three or four I.C.I. men attend each course, which may comprise a total membership of 50 to 60, representing many different companies, nationalised organisations and Government departments. While resident at the college the members are engaged in the study and discussion of general matters of administration and management. Views and ideas are exchanged and formulated against the background of diverse industrial activities and the general system of Government administration.

Those of us engaged in organising courses realise how much success depends upon the instructional methods employed. In the case of management training we have to recognise above all that the members of a course often possess many years of experience, and every opportunity must be taken to draw out the views and opinions of those who have a contribution to make. Talks are necessary to open up a discussion, but the extent to which people with experience can be influenced in their ideas and attitudes by the force of a reasoned and convincing argument determines the value of the course.

The conference method has been developed with this objective in view, but this calls for considerable skill upon the part of the chairman if the best results are to be obtained. Questions and answers may often clarify a point, but the guided discussion that causes people to examine objectively and critically the basis upon which their views are held often leads to a better appreciation of the other fellow's point of view.

The June edition of the *Magazine* contained a description of the courses for "industrials" at Cheshunt College,

Cambridge. Cheshunt provides an opportunity for a young man possessing potentialities as a manager to step aside for a short period from a successful but perhaps somewhat circumscribed professional pursuit and immerse himself in a university environment, where the influence of a very liberal curriculum helps in the adjustment of ideas, the broadening of outlook and the reassessment of values—a process vital to the make-up of a man aspiring to management responsibilities.

These courses have been attended by a number of I.C.I. men during the past four years.

There are many other illustrations that could be given of the ways and means that are provided through training activities, both within and outside the Company, to help those whose past record shows promise for the future and who are ready to help themselves and to make the effort that is re-



In the Conference Room at 2 Grosvenor Place, members of the Staff Training Course hear senior officials speak about their own work. Here Mr. R. A. Lynex, the Company's Secretary, talks on limited liability companies.



The inaugural luncheon. Members of the Staff Training Course listen to an informal talk over coffee by Mr. H. O. Smith, Joint Personnel Director.

quired. It must never be overlooked, however, that these activities are essentially coaching methods, and the treatment will need adjustment to each individual case. Management has no set rules for progression; there is no organised plan for the attendance of managers on such activities as I have described, and, above all, there is no passport provided as a result of participation in these courses. All these things exist only as part of the coaching process, and their contribution can only be judged by the advantage that is taken of them and the benefits that are derived and applied by those who attend.

I have confined myself to the help which training can give. It must be emphasised, however, that a constant effort is made to pass down the line the general principles of management which represent the policy and spirit of the Company, and a continuous search is made for men who have the innate qualities of management which can be utilised and developed.

Of management it can be said "One must learn by doing the thing, for although you may think you know, you have no certainty until you try."

Glimpses Into the Past

3. Some Early Dyemakers

By E. F. Wood (Dyestuffs Division)

Ninety years ago England pioneered the synthetic dyestuffs industry. For this we must thank the initiative of a handful of men and not the least William Perkin, Read Holliday and Ivan Levinstein. From these men the Dyestuffs Division of today is directly descended.

THREE of the oldest manufacturing firms from which the Dyestuffs Division of I.C.I. is descended were started by youngsters who really had to fight for their livelihood. William Henry Perkin, who built his factory at Greenford Green, near Harrow, and Ivan Levinstein, who founded Levinstein Ltd. at Blackley, Manchester, were only 19 years old when they set up in business. The third, Read Holliday, was 21 years old when he started his firm in Huddersfield.

These men were pioneers of the dyestuffs industry—men of adventurous spirit with an unexplored country before them. But it was not only their chemical knowledge which led them to success; they overcame setbacks and obstacles with courage and resource. In the early days they not only bought their own raw materials but sold their own products practically from door to door.

They took every possible advantage of the valuable field of discovery which the technique of synthesis in organic chemistry had opened to them. The profit motive was, in general, the mainspring of their work. Promising lines of scientific discovery would be abandoned if unlikely to show a quick return. Their main purpose was to build up successful private businesses for themselves and their families. These remarks do not apply with the same force to Perkin, for although he succeeded in his industrial enterprise he had not the same commercial instincts, and at the age of 36 he sold his interest in Perkin & Son—admittedly for £100,000—and spent the rest of his life in the work he loved best—scientific research.

W. H. Perkin, the discoverer of the first synthetic dyestuff and the youngest son of G. F. Perkin, who then lived in a house known as King David's Fort in Shadwell, London, first showed an interest in chemistry



A portrait in oil of Sir William Perkin at the age of 68

when he was 12 years old, an interest that never waned until his death in 1907. The story of his discovery at the age of 18—the experiments to make quinine from an artificial substance carried out in his rough laboratory at home during his Easter vacation from the Royal College of Chemistry; the black precipitate he obtained from one of his experiments which, on examination, was found to contain the colouring matter which he called aniline purple or mauve—this has been told very many times. But it does not stale in the telling, for it was the start of an epoch, a new phase of industrial revolution.

Following a satisfactory, though guarded, report from Messrs. Pullar of Perth on his specimens of dyed silk that, “if your discovery does not make the goods too expensive it is decidedly one of the most valuable that has come out for a long time,” he took out a patent for the preparation of the colour on 26th August, 1856. His next step, the decision to manufacture the product on the industrial scale, could well be termed audacious, for as he said himself:

At this time neither I nor my friends had seen the inside of a chemical works and whatever knowledge I had was obtained from books. This however was not so serious a drawback as at first it might appear to be, as the kind of apparatus required and the character of the operations to be performed were so entirely different from any in use that there was but little to copy from. In commencing this manufacture it was absolutely necessary to proceed tentatively, as most of the operations required new kinds of apparatus to be devised and tried before more could be ordered to carry out the work on any scale.

But his difficulties were not only mechanical. The raw materials required were expensive and difficult to obtain and often of poor quality. In spite of all the obstacles he had to contend with, less than six months after the building of the works began—in December 1857—mauve was in use for silk-dyeing in the dyehouse of Mr. Thos. Keith of Bethnal Green.

Perkin, who always gave great credit to his father and his brother for their encouragement and assistance, said:

My father, who was a builder, was much disappointed when I took to chemistry, as he wished me to be an architect, but nevertheless, when I obtained the mauve he risked most of the capital he had accumulated by a life of great industry in building and starting the works at Greenford Green (evidently having great confidence in me). This was indeed a very noble act on his part, for which I have always



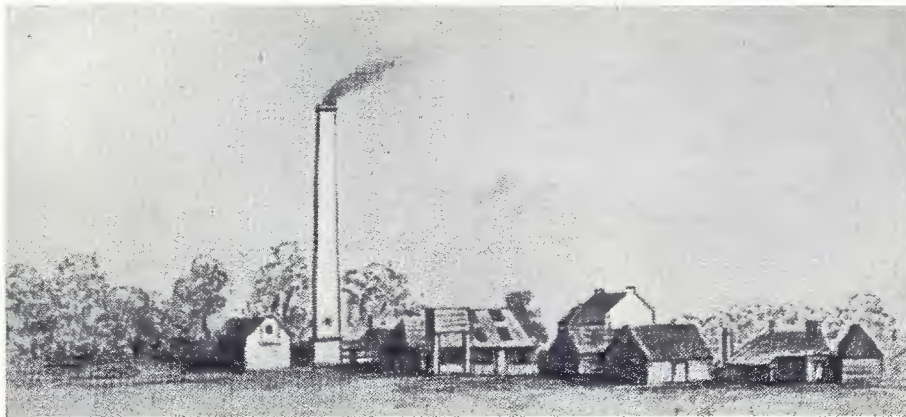
Ivan Levinstein

felt very grateful, for had it not been for this I probably should not have been able to start this industry, as few would have been inclined to undertake the risks connected with the manufacture of such a new and untried product as the mauve dye then was.

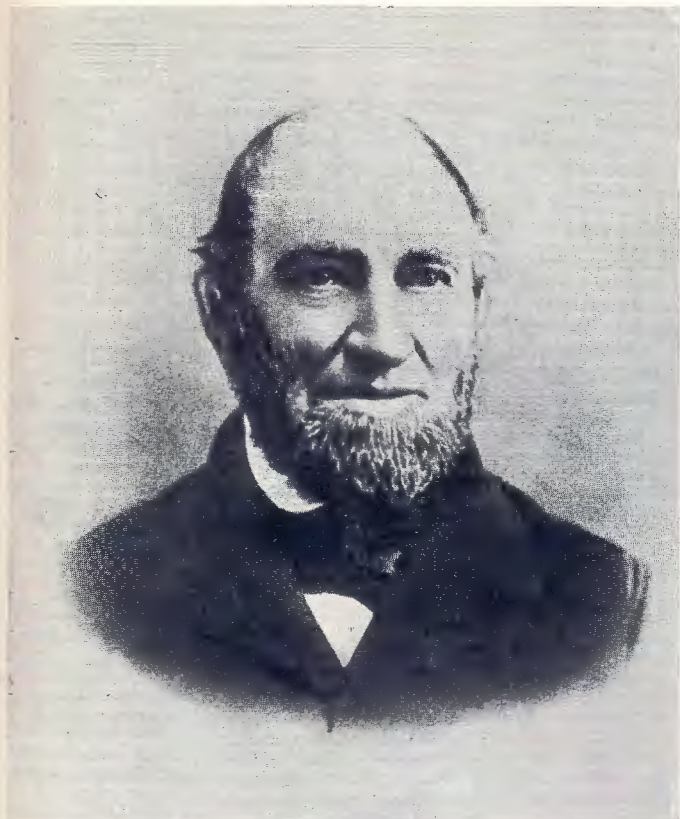
The manufacture of the dyestuff was not Perkin's only problem. It was not just a question of placing it on the market; he had to convince the consumers how good it was and then teach the dyers and printers how to use it. Pioneering work such as this was no easy matter for a youth who had practically no experience in the trade and who was not very sure of his ground. The words of the early report of Messrs. Pullar—“Should it appear that it will not be of service to printers, it will be questionable whether it would be wise to erect works for the quantity dyers alone will require,”—these must have been always present in his mind during the first twelve months.

During his later years he did much valuable research work and received many distinctions and honours, including a knighthood and a fellowship of the Royal Society. At the international jubilee celebrations of the discovery of mauve in 1906 Sir William was fêted by representatives of scientific societies and commercial organisations from all over the world.

Read Holliday was born at Bradford in 1809. His father was a wool-spinner at a mill in Bingley. When



The original works of William Perkin, built in 1857 at Greenford Green, near Harrow, in which the first synthetic dye known to the world was made



Read Holliday

he was 21 he rented premises in Leeds Road, Huddersfield, and made ammonia from gasworks liquors, which he sold to the Yorkshire mills for wool-scouring. Nine years later he removed his business to a nearby site at Turnbridge, where he had some land on which he allowed the local gasworks to dump their waste tar, and ingeniously used the coal-tar mixed with ashes as fuel for his ammonia stills. It is remarkable that Read Holliday made his business profitable by burning the very substance which later became the source of the valuable raw materials on which the coal-tar colour industry was based, and that the firm he founded in those early days at Turnbridge later became the largest dyestuffs factory in Great Britain.

Read Holliday never had a chemical training, but he was resourceful, energetic and ingenious. In 1848 he patented a naphtha lamp and eventually took out over forty patents to cover the

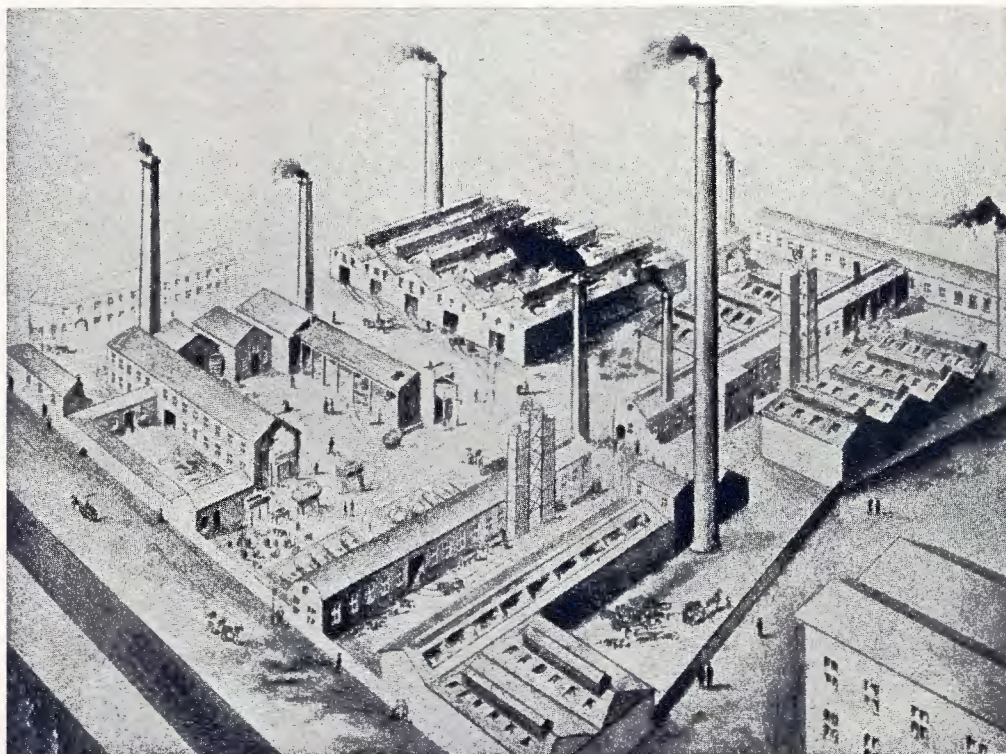
various purposes, ranging from household lighting to railway signalling, for which he adapted it. This started a lucrative trade which he furthered by obtaining naphtha to burn in his lamp by distilling coal-tar from the gasworks dump. He let little go to waste, and the creosote oils produced as a by-product of the distillation he sold for creosoting railway sleepers. The pitch was disposed of to briquet manufacturers for 20s. per ton.

By his prudent methods his business prospered and he became the largest tar distiller in the North of England. At the height of his career he had six works in full swing, at Huddersfield, Bingley, Bradford, Attercliffe, Blackburn and Bow in London.

At the time of Perkin's discovery Holliday was fortunate in having large stocks of the primary raw material benzol required for the manufacture of mauve, and he took full advantage of the opportunity. Later he realised the potentialities of the new industry and started to make some of the intermediate products which were in demand by the dyemakers. In 1860 Read Holliday made his own entry into the dyestuffs field with the manufacture of magenta.

He had five sons and two daughters, and all the sons eventually entered the business. Some eight years after Read Holliday & Sons started to make dyestuffs three of the sons, Thomas, Charles and Edgar, bought the business from their father who retired to Harrogate, where, not content to live an idle life, he busied himself with building. He built practically the whole of Queen's Road in Harrogate and died there on 3rd March, 1889, at the fine age of 80. "Hard work never killed any man" could well have been his epitaph.

Ivan Levinstein was the youngest member of a well-known Berlin family, which is mentioned in the memoirs of Bismarck and in those of the composer and pianist Rubenstein. With



Read Holliday's works at Huddersfield in 1865. Here coal tar was distilled to manufacture dyestuffs amongst other products.

the decline of the family's fortunes Ivan, born at Charlottenburg in 1845, decided, partly through political reasons and partly because he thought he could build up a fortune of his own by making dyestuffs, to emigrate to England. He was only 19 years old, and his chief inspiration no doubt came from the success of Perkin's discovery a few years earlier. He was not ill qualified for the job, as he had been educated at the Technical High School of Charlottenburg and had studied chemistry under Professor Weber at Berlin University.

Young Levinstein, paying little heed to the warning of his father that the synthetic dyestuffs industry was already on the wane, arrived in Manchester in 1864 and bought a large private house in Blackley, and used the rooms as laboratories. As at Read Holliday's, magenta was the first dye produced, and Levinstein actually travelled with a parcel of it to Scotland, sold it for cash, went to Hull with the money, bought some Continental aniline, and came back to Blackley to convert it into more dye.

As his business gradually grew, he bought the adjacent cottages one by one, removed the dividing walls and put in small manufacturing plant, all of which was operated by hand. Years of steady progress convinced Levinstein that he was on safe ground, and in 1887 he purchased the nearby site and buildings known as Delaunay Works, originally the first Turkey Red dye plant in England, built by the Huguenot emigrant, the Marquis de Lonnais, and now the Blackley Works of Dyestuffs Division.

Levinstein's energy and enterprise were not confined to the manufacture of dyestuffs; he had many outside interests. One of his ventures was the Plumbley Ammonia Soda Works, started in 1908, which was sold to Brunner, Mond & Co. in 1915. One of his failures should perhaps be mentioned (although it is hardly connected with the chemical industry): he helped to start the Wrexham Brewery for the manufacture of lager beer. The result is best described in his own words: "The preference of the Britisher for a drink with more bite in it, made me lose much money."

He took a very keen interest in everything which related to scientific training, and the work he did to improve the methods of technical education was recognised by the award of the degree of Master of Technical Science by Manchester University. In 1871 he founded the *Chemical Review*—the first chemical trade journal published in this country—which he edited for several years. He was one of the founders of the Manchester School of Technology, twice President of the Society of Chemical Industry, a Governor of the Victoria University, and for twenty-six years was a Director of the Manchester Chamber of Commerce.

Amidst all his other activities, perhaps the most notable was one of national importance—the reform of our Patent Laws. This task constantly occupied his thoughts, and con-

sumed a large amount of his time and money. He pursued this reform with increasing success over a period of thirty-five years, in spite of the fact that in so doing he incurred the hostility of the large German chemical firms, and suffered heavy personal losses in legal actions to prove his point. In one of his presidential addresses to the Society of Chemical Industry on this subject he showed some of his regard for Britain when he said: "I have spoken strongly, but not too strongly. I love the country of my adoption too well to say less than what I believe to be the truth."

A picture of how Ivan Levinstein appeared to a man who had worked for him for many years is portrayed in the first Ivan Levinstein Memorial Lecture, given by Dr. Max Wyler before the Manchester Chemical Club in 1937:

He was fearless in opposition, quick in temper, modest to a degree about his achievements, though he carried with him an atmosphere of stateliness, and I would say, above all, he was a deadly enemy of cant. He asked for and obtained to a rare degree the goodwill and loyalty of the people who worked under him and he did not

spare them either sarcasm or praise. The great charm which emanated from him must have disarmed many an opponent, and I cannot imagine that he had a single personal enemy.

He died at Hale, Cheshire, on 15th March, 1916.

These pictures of three men who were among the first to develop a new industry are necessarily brief and cannot properly convey the struggles and financial hardships of their early days, but they do show something of how their efforts led to success. Although Perkin's original discovery was the foundation-stone of the synthetic dyestuffs industry, perhaps too much should not be made of it, since, in a sense, it was accidental. (He himself once modestly remarked, "this discovery did not in any way originate from a desire to produce a colouring matter.") Too much credit, however, cannot be given to him for the way he followed up and developed his discovery, and for the great courage and tenacity of purpose which he showed in overcoming his early manufacturing and marketing difficulties. And to the continual striving and perseverance of men like Ivan Levinstein and Read Holliday we largely owe the establishment of the British colour industry and its survival through the years of intense Continental competition before the first world war to become the great organisation that it is today.

Read Holliday & Sons Ltd., after eighty-five years' existence, became British Dyes Ltd.; Perkin & Son, after changing hands several times, eventually became part of Levinstein Ltd. in 1917. The two firms merged together in 1919 under the name of the British Dyestuffs Corporation Ltd.—the forerunner of Dyestuffs Division.



An interesting historic relic from the early days of dyemaking

Information Notes

POTASH DISCOVERIES IN YORKSHIRE

On 17th October Dr. Alexander Fleck, Group Director for Billingham and Central Agricultural Control, read to the Newcastle Branch of the Society of Chemical Industry a paper on the deposits of potassium salts in north-east Yorkshire which have been discovered by I.C.I. This paper attracted widespread attention, and The Chemical Age commented: "Some of the conclusions now advanced may afford a much more solid occasion for national celebration than, for example, the Festival of Britain." The following is a summary of Dr. Fleck's account of the discoveries.

LARGE workable deposits of potassium-containing minerals have been discovered in the Eskdale District of the North Riding of Yorkshire as a result of borings carried out over the last two years by I.C.I. To date the survey has disclosed the presence of at least 200 million tons of sylvite (potassium chloride) within the surveyed area of 12 square miles. It is not yet possible to say whether these sylvite deposits can best be worked by mining techniques or by solution methods. However, assuming that 35% of the deposits can be extracted, the present discoveries should satisfy British agricultural and other requirements for at least 140 years.

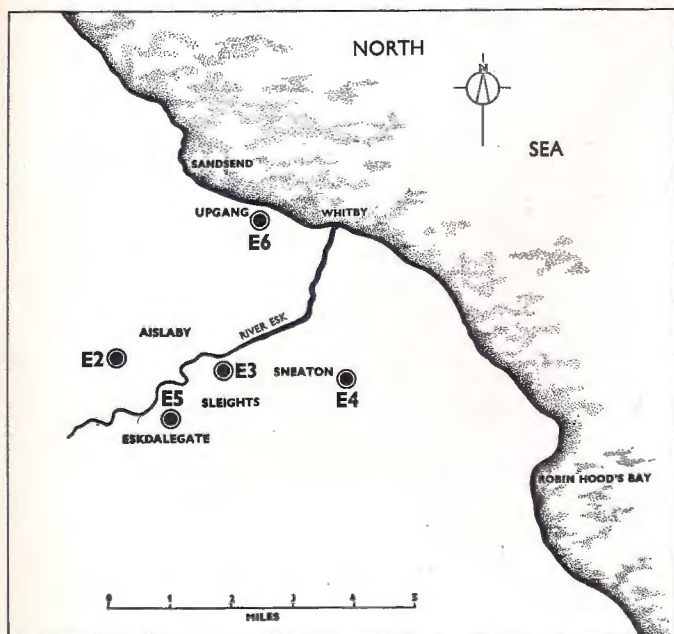
The element potassium is of considerable importance to all of us as individuals. We all require a daily ration, dispersed through our food, of about three grams of elemental potassium per day, so that the 50 million people in the United Kingdom need the equivalent of approximately 100,000 tons of potassium chloride per year. Potassium is also an essential component of soil fertilizers, being one of the three major plant foods. To

maintain British crop production at its present level without reducing the fertility of the soil, some 400,000 tons of potassium chloride are needed annually in the form of fertilizers. If, however, present trends continue, our needs might grow to as much as 500,000 tons.

At present the United Kingdom is entirely dependent upon foreign sources for supplies of potassium salts. The principal potash-producing country is Germany, and 60% of its capacity lies within the Russian-occupied zone. France, the U.S.A., and to a less extent Russia, Spain and Palestine, are other sources of potash.

Britain's dependence on foreign sources for this vital commodity, both in peace and also in war, was one of the considerations which led I.C.I. to investigate the Eskdale area, where a boring for oil by the D'Arcy Exploration Company in 1938-9 revealed some evidence during drilling of the presence of potassium salts among the thick deposits of rock salt which were found. All the facts concerning this discovery were placed before the Government, but, war having then broken out, further investigation was postponed.

Late in 1947 the subject was raised again, and attention was concentrated on the observation that during the earlier oil boring a brine had been obtained which contained small



The boring area a few miles south of Whitby in Yorkshire. Whitby is 29 miles as the crow flies from Billingham.



Cores from the borings stocked in racks

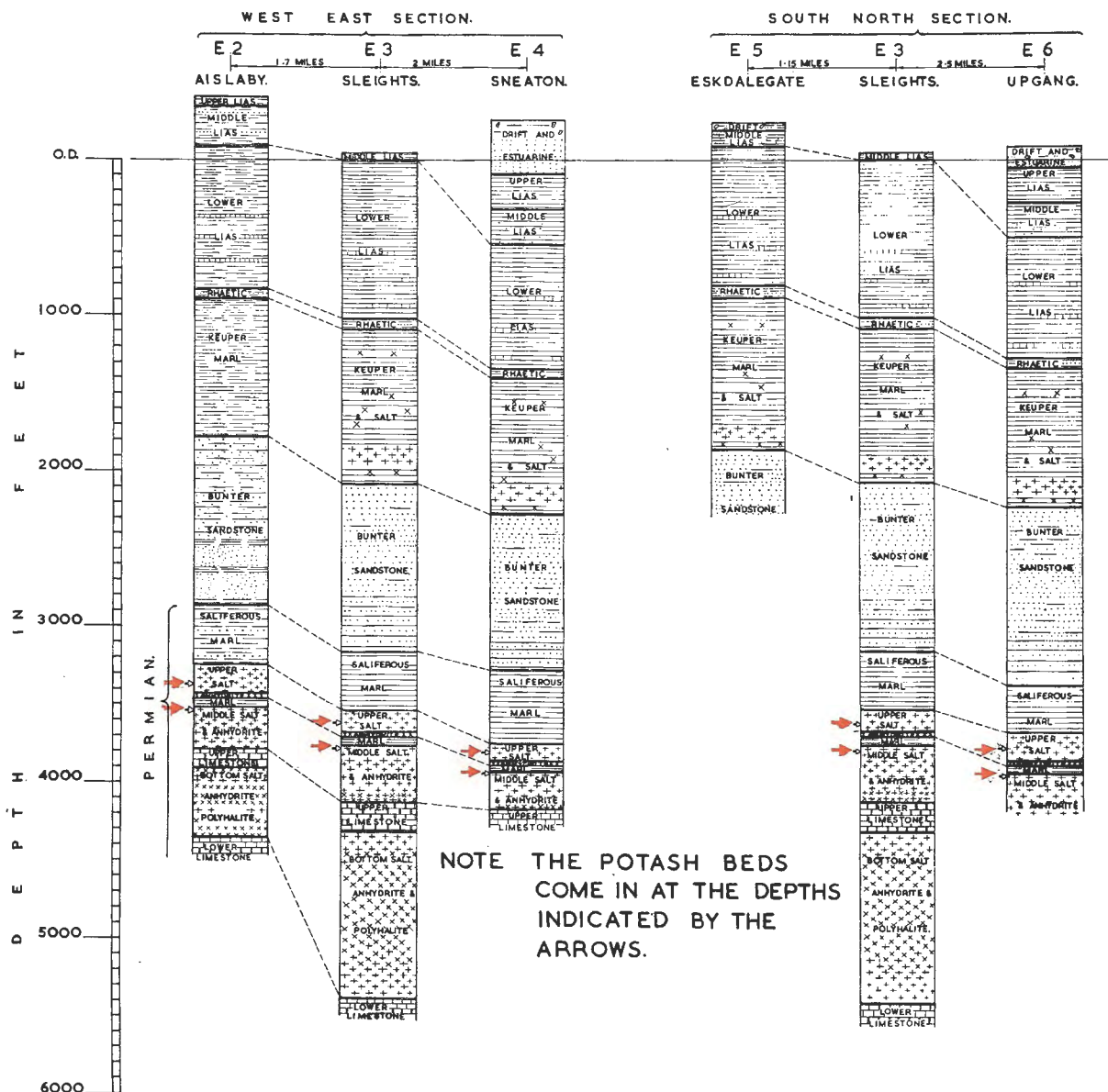


Diagram of the "drilling logs" side by side

amounts of potassium chloride. It appeared that if this potash-bearing brine was present in relatively large quantities, and if it could be pumped to the surface fairly easily, it might be possible to separate economically the dissolved potassium salt if full advantage were taken of the economic source of steam supply which I.C.I. expect to have at Wilton Works. Several boreholes were therefore sunk and a survey undertaken which has so far cost the Company £170,000. The average cost of each borehole has been about £45,000.

As a search for potash-bearing brine, the exploratory boring programme has been a complete failure. But this failure was eclipsed by the subsequent discoveries. "Then suddenly, at a depth of 3834 feet," writes Dr. Fleck, "sylvite appeared in obviously considerable concentration among the halite—great chunks of it that caused much excitement to all who saw them—especially since this went on for over thirty feet before the cores were once more composed of halite only." It is now clear that in the great thicknesses of rock salt which exist in

the area there are two separate and distinct beds containing sylvite lying at a depth of approximately 4000 feet.

The work was done by a team led by Dr. J. W. Armit, as the chief executive of the Wilton Works of I.C.I., and secondly Mr. J. Hughes, head of the Technical Department. The actual drilling was done by the Bremner Well Drilling Company. From the early stages the Ministry of Fuel and Power, and later the Board of Trade, maintained a steady interest in all that happened. Practical difficulties normally met with in deep drilling were aggravated during this investigation by the necessity for using special coring fluids which would have the minimum solvent action on the highly soluble potassium salts.

Geologically the Eskdale deposits are closely related to the German and Russian deposits, having like them been formed by the evaporation of the Zechstein Sea which covered much of Central Europe and Northern England during the Permian period. The Permian period occurred many years ago, perhaps

about 200 million, and lasted for about 30 million years. It followed the period in which our coal measures were laid down. The Eskdale deposits lie deeper than other commercially worked sources, but in quality and thickness they compare favourably with existing potash fields. Also, sylvite is the easiest of the commonly occurring potash-bearing minerals from which to obtain potash in marketable form.

There is no evidence that the deposits are limited to the surveyed area, and it is believed that the field may, in fact, be much larger. In addition, at two of the Eskdale boreholes some polyhalite, another potassium-bearing mineral, was found. Polyhalite is a complex sulphate mineral containing 15% of potash when pure. It is relatively insoluble in water. Its industrial potentialities have yet to be investigated.

In comparison with potash deposits at present commercially worked in other countries the Eskdale deposits lie deeper than the deepest, but there are two undoubtedly workable beds with sylvite. These two beds are apparently lying nearly horizontally and are not contorted steeply.

Such questions as to whether mining technique is to be used to obtain the potash or whether solution methods can be used similar to brine methods have not yet been decided and can only be answered after considerable experiment. A great deal of expensive work will still have to be done to determine the boundaries of the field, but there is adequate evidence that it is worthy of being converted into a commercial undertaking. Even if only 35% of the deposits can be extracted, we have 70 million tons, which even assuming a United Kingdom consumption of 500,000 tons would give us enough for 140 years.

The value of the present imports of potash is not published. Since 1939 all potash supplies have been purchased by the Ministry of Supply, and the price at which potash is released to farmers has been subsidised. Potash imports probably cost this country about £6 million a year. This figure shows what a help an indigenous source of potash like the north-east Yorkshire field can be. During the last war our supplies from Germany and France were cut off and had to be replaced by supplies from Russia and the U.S.A.

Potash is needed by I.C.I. for the manufacture of fertilizers, explosives and potassium salts for the chemical industry.

SOJOURN IN CZECHOSLOVAKIA

By H. C. Wrather (Dyestuffs Division)

At length the Orient express, after an overnight trip across France and Southern Germany, arrived at Schirnding, the last German town before Czechoslovakia. I was now almost the only passenger aboard, and the American M.P. who searched all compartments of the train was astonished to find an Englishman en route for Prague. He copied all details from my passport with meticulous care—I never knew whether for my benefit or for U.S. security purposes.

As the train steamed away along the no-man's-land between the frontiers, I experienced some mixed feelings. There were those of unpleasant foreboding, for I was approaching a country where human rights and freedom are no longer of consequence, where Western European nationals are constantly under suspicion, and are imprisoned or worse on the flimsiest pretexts of espionage. But then, in contrast, there was the exhilaration arising from the expectation of new and exciting adventure in a country I had never visited before, and the

prospect of substantial dyestuffs sales in a market hitherto little exploited by I.C.I. rose uppermost in my mind.

Soon it was clear that Germany was now left behind, for the wide road running alongside the rail track had been blown up and huge earthworks erected. I learned later that the whole of the western frontier was patrolled by armed guards and trained dogs and was enclosed by electrified wire. The only means of exit is, I understand, to pay large sums to obtain faked documents for safe conduct into Germany. This, of course, is a most risky business, since there are so many unscrupulous racketeers who extract large rewards for worthless services, often leading the victim into a trap set by secret police.

Our first stop in Czechoslovakia was at Cheb. I found the station decorated with red flags bearing the hammer and sickle, Czech national flags, red bunting, and innumerable photographs of the red leaders, Stalin, Gottwald and others. Armed Czech guards boarded the train. They examined every part of it during the one and a half hour's halt, searching my luggage in detail, but they were not too impolite and did not inconvenience me unduly.

The remainder of the journey to Prague proved uneventful, and I finally arrived at the Wilson (named after President Wilson) station of Prague early in the evening. The city appeared undamaged. It was brilliantly lit and bustling with activity. My taxi cost roughly 10s. for the three-quarters of a mile between the station and the Ambassador Hotel. This was for a dilapidated state-owned vehicle out of the common transport pool. I was coldly greeted by the hotel porter, who demanded and retained my passport and handed me the key to a large room on the second floor. The cost of the accommodation was of the order of £3 per night, excluding meals. The hotel contained many other foreigners, ranging from French, Swiss and Dutch to Turkish and Egyptian.

No one appeared to pay much attention to me until I met a cheery Englishman residing in the hotel who was a junior member of the consulate staff. From the outset I was grateful to him, since he later introduced me to the Consulate Club, which proved to be like a breath of fresh air through the stifled atmosphere which Communism seems to create around unsympathetic foreign visitors. When I had the leisure, I walked freely around the streets of Prague and found that I was living in a most beautiful city which consisted of a well-planned modern area side by side with the ancient buildings and fortifications which had at one time been the original capital. This was formerly the city of the Bohemian kings, and the Wenceslas Square bears a huge monument to the memory of King Wenceslas of carol fame.

Unfortunately the only time when I had an opportunity to leave Prague for the surrounding country was on one week-end when all entrances and exits to the town were closed because of a large military parade. The parade was the most impressive I have ever seen. It was in celebration of the liberation of Czechoslovakia from the Nazis by the "conquering" Soviet armies, the date being 7th May, 1945. The procession began at 8 a.m. on Sunday, all entrances and exits to Prague being closed since 11 p.m. on the previous evening. All doors to the hotel where I was staying were locked, and so I was obliged either to watch the parade from a window or to find other amusement in this form of isolation.

With a blare of brass bands the first contingent of soldiers, dressed very similarly to our own, each man armed with a tommy gun, filed past the window. How many men were involved I was unable to count, but there must have been

several thousand. Then followed more infantry with fixed bayonets at the slope. These in turn were followed by hundreds of tanks, mobile guns, bren carriers and military vehicles. And now came the paratroopers, exactly like British commandos, each carrying parachute harness, sheathed daggers and wearing red berets.

As far as business was concerned, since everything is nationalised, one sells one's products only to single organisations representing whole industries, and not to individual factories. For example, the textile industry is centralised in the organisation known as Centrotex (Prague), which arranges all purchases of raw material for the whole industry and conducts all distribution of finished textiles, both at home and on the export market. The chemical industry is centred in Chemapol (Prague), and I learned that a further degree of centralisation is to take place at the end of this year by which Chemapol will buy all chemicals required for textiles, paints, paper, rubber, leather and other products.

There is no doubt that in theory the system aims at simplicity and should produce much smoother working. In Prague, however, there was so much bureaucracy, such an unwieldy organisation of staff, and so many points of confusion during



Czechoslovakia and the surrounding Iron Curtain countries

liaison between the control board and the individual factory managements, that it was almost impossible to find any official sufficiently *au fait* with even a limited field to facilitate reasonable negotiations. Moreover, the technical calibre of nearly all executives struck me as being extremely low.

I had many interviews with people authorised to purchase Dyestuffs Division's products. In no case was I allowed to see anybody alone, but invariably in the presence of others.

In the hotel I had several visitors. One and all they asked me to go with them to quieter surroundings where business could be discussed without fear of any repercussions to themselves as a result of being found by the secret police in association with western "capitalists." Always when any matters were discussed in public between myself and Czechs I felt most uncomfortable, since the latter were constantly leaning over their shoulders and speaking in low voices, in case our "friends" the G.P.U. were in the offing.

The propaganda displayed in all shop windows and at prominent places on most buildings was somewhat simple. Apart from the usual flags it consisted of huge photographs of

red leaders, including Lenin and Marx side by side, with in addition some crude posters of Truman, Churchill and Attlee depicted in a compromising manner. For example, Churchill was in one case shown in his under-attire, but nevertheless smoking the usual cigar. A frequent poster slogan was, I gathered from an interpreter, somewhat of a paradox, being "We fight for peace." This captioned a picture of some Russian soldiers (one with a child in his arms) sitting on a tank, being handed flowers and gifts from striking Czech young ladies.

There was little to amuse one in Prague, though on two occasions I was taken to a cabaret by friendly Czechs. In both cases the secret police examined the identity documents of everyone present, but the waitress and attendants seemed to pass round word of the impending search a few minutes before it began, and in order not to jeopardise my hosts I was able to move to another part of the hall.

The public movements of President Gottwald resulted immediately in activation of the secret police and also disruption of traffic. When the President visited an opera performance at the National Theatre, all roads converging on the theatre were patrolled by police, and for a radius of $1\frac{1}{2}$ miles no public or private cars were allowed to use the roads.

When the time came for me to leave the city for home I was more than delighted. The constant sight of interminable yards of red cloth, of photographs and posters of Stalin, and of pictures of communist exponents (including Charles Dickens), and above all the feeling of insecurity made me long for home.

CHINA DAYS

In the following Information Note Sir Frederick Bain, M.C., a deputy chairman of I.C.I., contributes a review of Ronald Farquharson's book Confessions of a China Hand, just published by Hodder and Stoughton, price 12s. 6d.

It was Harriet Martineau, I think, who said that when she felt she needed a holiday she re-read one of George Borrow's books.

To read Ronald Farquharson's *Confessions of a China Hand* in the midst of the pressures and anxieties of life today is a rare and refreshing experience. Even the most buoyant of us need at moments to be reminded of the richness of ordinary life and the adventure that lies round the corner for all of us in trade and industry.

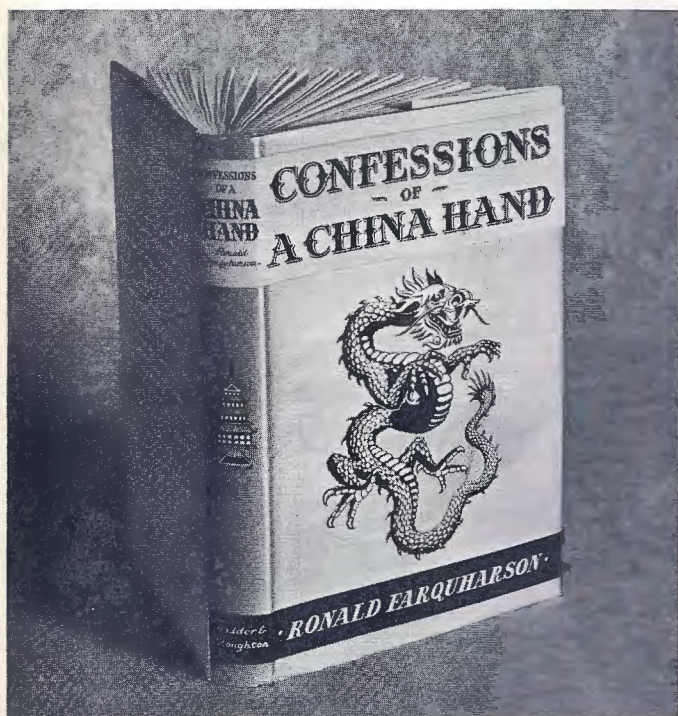
This book is based on the gleanings of the diary of ten years in China. It is the story not only of the pioneer work of the youthful enthusiast in journeyings where no Englishman had even trod; it tells also in passages of acute perception and often of great beauty of the troubles then falling upon that ancient and elegant civilisation. The author travelled a long way and learned much since that first trip when he thought that Herr Hao would not know a Highlander from a Hun.

The book is packed with characters and local colour described so artistically and with such affectionate understanding that some of the characters like "Jason Ho;" "Ah Fat," that most admirable of all Crichtons; Marie, "Travel-Amah" at once claim for themselves a place in our memories. I knew "One Arm Sutton," and in the few sentences about that soldier of fortune there is authentic character-drawing. In the full-length "Portrait of a War Lord" the author gives us a picture of historic value told so dramatically that it becomes

fixed in the mind. The reverie on "The Hill" with the rifling of the tomb of the Dowager Empress concentrates into a moment in time the turbulence of forty years in the life of China.

But this book is full also of fun; it carries its seriousness lightly; it is honest; it can be and is scathing about the Japanese; but its main characteristics are its love for the everlasting China and delight in human character.

In these days, when the printing presses are flooding us with books on all kinds of "isms," with novels revelling in the fashionable neuroses of the time, it is a joy to find this healthy, human book based on experience and written with distinction. It is peculiarly gratifying that it should be written by an I.C.I. man and should be based so largely on experience with I.C.I. in that part of the world so immediately in our minds today. There is still, thank God, scope in industry for the artist and the adventurer.



Doctor Johnson said "A mere literary man is a dull man: a man who is solely a man of business is a selfish man: but when literature and commerce are united they make a respectable man." Johnson of course, used the word respectable as meaning commanding respect. That, the author of this book does.

This is a book that should be bought to be read and re-read. It is not only a record of adventure in China, it is an acute study of life, full of good stories, and the last haunting study, "Return to Eden," is a tribute as moving as it is beautiful, to a wonderful woman by a discerning and gifted husband.

Confessions of a China Hand is dedicated to "Bunty and the Twins." "The Twins" are fortunate in having George Macdonald of *Back of the North Wind* as their maternal great-grandfather and in having Ronald Farquharson of *The China Hand* as their father.

I am grateful for the happy hours this book has already given me in reading, re-reading and savouring, and I wish to share my pleasure.

A DISINFECTANT FOR BEER GLASSES

Contributed by Dyestuffs Division

A new powerful disinfectant which has just been put on the market under the trade name of 'Vantoc B' has been developed by I.C.I. especially to meet the requirements of the brewing industry.

In an address entitled "Observation on Glass Washing in Public Houses," delivered to a joint meeting of the London Section of the Institute of Brewing and the Incorporated Brewers' Guild by Mr. H. A. Bunker, M.A.(Cantab), of the Research Department of Barclay, Perkins & Co. Ltd., it was pointed out that in some directions at least this country has lagged behind some others in the matter of food hygiene, and any attempts to improve conditions in such a way that the health and safety of the public is increased are obviously laudable. Mr. Bunker went on to say: "It is natural that in this general move towards the more hygienic preparation of food and drink the licensed house should come in for a certain amount of attention." One of the main objects the brewers and publicans have in view is to produce a glass which is clean, and by clean we mean not only looking nice and bright, but bacteriologically satisfactory.

As a result of a considerable amount of work, which involved testing a variety of substances both in laboratories and public houses, a special scientific committee recommended through the Institute of Brewing to the Brewers' Society that the use of 'Vantoc B' in the washing-up sink is the most satisfactory method of tackling the question of hygienic glass-washing in public houses at the present time.

'Vantoc B' is one of a group of products known chemically as quaternary ammonium compounds and called "quats" for short in the trade. Most of them are manufactured at the Grangemouth works of Dyestuffs Division. A notable exception is 'Velan PF,' renowned as a water-repellent finish on all classes of textile fibres. It is made at Huddersfield. These quaternary ammonium compounds have a wide variety of uses and they are marketed under different trade names. 'Cetavlon,' for instance, has become well known for the cleansing of wounds and burns, for cleaning the skin before an operation, and for the sterilising of surgical instruments.

The newcomer to this range, 'Vantoc B,' has the marked property of destroying dangerous bacteria efficiently and rapidly. It solves the problem of maintaining beer glasses in an adequate standard of cleanliness and freedom from harmful infection which is so much desired in the brewing industry. Merely to rinse or wash beer glasses or tankards in water or even in a solution of an ordinary detergent is not sufficient. One contaminated glass may effect the whole rinse-bowl and pass on an infection to all other glasses rinsed in the same solution; or, what is even more serious, it may infect the rinse-bowl itself, with the result that the subsequent rinse waters may be repeatedly infected.

'Vantoc B' is very easy to use, as it dissolves instantly in hot or cold water. Drinking vessels need only be immersed and rinsed in a solution of one teaspoon to half a gallon of water and allowed to drain for two minutes and they are ready for use. It is unnecessary to polish the glasses. A slightly stronger solution wiped over the surface with a cloth is equally effective for disinfecting shelves, table tops and bar counters. 'Vantoc B' certainly provides the simplest and most convenient method of keeping glasses free from taste, odour and infection.

BLAST FURNACE RELINING

Contributed by Nobel Division

The operation of relining a blast furnace at Scunthorpe, in Lincolnshire, in the record time of 36 days 7 hours instead of the usual of two to three months, has already been briefly reported in the *Magazine*. Nevertheless, the success of this new explosives technique developed by Nobel Division and its significance in increasing steel production are such that a note on how the job was done is perhaps of interest.

The intense heat in a blast furnace causes unavoidable wear and tear of the lining and the efficiency of the process deteriorates. Every five years, therefore, the blast furnace is blown out and stripped, and then relined to ensure that safety and efficiency are fully maintained. Before the war the need for speed was less important, since there would usually be a blast furnace in reserve, but today the problem of production is such that every available furnace is in use and consequently every day saved in relining means a greater production of pig iron.

The process of relining is as follows. As soon as all molten iron and slag have been tapped from the furnace, raking is begun to remove loose material. Then a cold blast is blown through the furnace for two days to cool the inner surface, and the top (or bell) is removed. Once the furnace is cooled men are put to work prising away the refractory lining, using crowbars and hammers. They begin at the top of the furnace, and as they work their way down towards the parts of the furnace which have been exposed to greater heat they meet increasing difficulties. Masses of fused material cling to the walls, filling the crevices which have been worn or burnt away in the brick.

The new technique consists of the use of explosives to remove this intractable material instead of scraping by hand. This is a delicate operation, as the charges must be so calculated that the outer shell of the furnace is undamaged. Sometimes plaster shots are applied, but more generally small shotholes are drilled and charged with a suitable explosive. This method of attack is continued until the hearth of the furnace is reached, where the problem is more difficult still. In the hearth there will be found a solid fused mass of coke, slag, iron and lining known as the "bear." Heavier explosive charges are here needed, and they can be fired even before the furnace is cold, in which case the shotholes are cooled with water before the charge is placed.

By using explosives in this way the process of removing the old lining is speeded up enormously, and thus a quicker start can be made to the relining of the furnace. As soon as all the old lining is removed, the furnace is relined with new refractories. Whereas before the war the entire process might be spread over half a year, it can now be completed in slightly over a month.

The explosives chosen for the operation at Scunthorpe were Polar Blasting Gelatine, Polar Ammon Gelignite 'B' and a specially sheathed 'Ardex' designed to withstand high temperatures. Three hundred and seventeen pounds of explosives were used in all and 140 tons of "bear" removed from the furnace.

IMPERIAL CHEMICAL HOUSE

At the present time out of a total Head Office staff of 1700 less than 400 work at Imperial Chemical House, where they are using the third and fourth floors and a small part of the ground floor. The rest of the building is still used by the Board of Trade. The remainder of Head Office staff are scattered over the West End of London in no less than twelve different buildings.

The first, seventh and eighth floors of Imperial Chemical House are expected to be derequisitioned by the end of the year, and there is a hope that the whole of the building will be handed back by the end of 1951. This depends on the completion of new Government offices in Whitehall, into which the Board of Trade, the present occupiers of Imperial Chemical House, are expected to move.

As the Board of Trade moves out the building is being cleaned and redecorated. Work on the third and fourth floors is now completed. A new modern telephone exchange on the fourth floor replaces the original exchange built on the third floor in 1929. The new exchange, as yet only half finished, handles telephone traffic for the parts of the building now occupied by I.C.I. staff.



A view of Imperial Chemical House from Lambeth Bridge

Cleaning and redecoration of the rooms on the floors already occupied has taken about three to four months for each floor, but as parts of the eighth floor have been used by the Board of Trade as offices and some of the kitchen equipment removed, the reconstruction of the refectory and dining-rooms and the refitting of the kitchen with new modern kitchen equipment may take about a year. The opportunity is being taken of improving the type and standard of lighting in the whole of the building.

Rescue in the Arctic

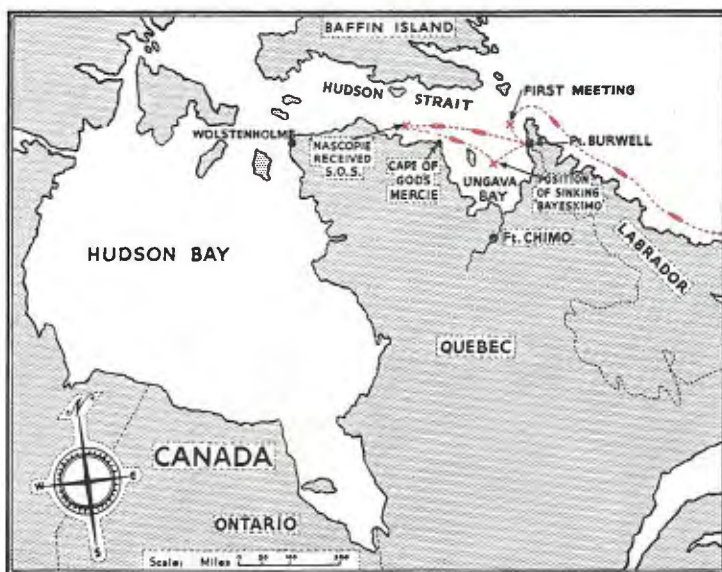


By R. A. B. Hardwick (Nobel Division)

THE entrance to the Hudson Strait in northern Canada, with its ebb and flow of six-knot tides, eddies, and races, is a trying obstacle even to the navigator who is familiar with this part of the world. The difficulties are increased a hundredfold when, after a hard winter has filled Hudson Bay with heavy field ice, the mildness of summer releases and spews this menace out through the strait on its way to the open sea.

On such an occasion as this, early on a sunny day in July 1925, our steamer *Nascopie* fought through the ice-floes bound for the trading posts of the Hudson's Bay Company on her annual supply voyage. At noon we sighted the *Bayeskimo*, another vessel of the company, on the same errand. Through the radio we learnt that her rudder had been damaged during the previous night by "pans" of ice overriding each other along her sides.

However, the captain of the *Bayeskimo* felt confident of dealing with the situation; so we both proceeded to Port Burwell, our first port of call. After discharging our various items of foodstuffs and merchandise we went our different ways—



the *Bayeskimo* southwards to Fort Chimo in Ungava Bay, and we towards Wolstenholme at the western end of the Hudson Strait. Field ice was still plentiful, and our progress in consequence was fairly slow.

At 3 p.m. the following day our radio officer was startled by the staccato chatter of an S O S signal. The *Bayeskimo*, we learned, was in the dire straits. "Sinking in 90 fathoms in Ungava Bay." This was the text of the message, followed by an approximate position near the Cape of God's Mercie. Immediately our course was

reversed to cover the intervening distance, estimated at 146 miles. Before long we heard that the steamer was in her final throes and the order "Abandon Ship" had been given.

The captain of the *Bayeskimo* had been unable to give an exact position; in addition, the fact that the ice-floe on which the survivors would spend the night was moving made our objective still harder to find. Our own difficulties were firstly the indirect course we should have to make through the ice, and secondly the limitations of night-time visibility.

As Navigating Officer I spent a harassing time endeavouring by stellar observations to keep track of our position. The



The Bayeskimo held tight in the grip of the Arctic ice

Master, Captain T. F. Smellie, immobile as a rock, spent the whole night conning his vessel as we steamed at top speed, grinding and crashing through the ice. His orders issued in a continuous stream to the helmsman as we careened in avoiding "growlers" (small bergs) or rose on top of heavy ice which cracked and gave way beneath us. Weather conditions began to deteriorate. There were continuous squalls and the wind increased, so that the sleet froze on our faces. Fog succeeded the night, and visibility was limited to a few hundred feet. The temperature was between 5° and 10° Fahrenheit.

At 7 a.m. the fog cleared, and with the lifting of the fog came shouts of joy and relief. On the horizon was a black

cloud. It was smoke from fires lit by the survivors with deer-skins soaked in petrol. All were soon helped on board by welcoming hands. Hot baths and warm food quickly restored their well-being, and later, under the guidance of the padre, a service of thanksgiving was held, deeply sincere. The following day we arrived again at Port Burwell. Our passengers were landed to await the relief ship, and once more we proceeded on our "lawful occasions."

As I walked the bridge during my next routine watch, I ruminated on the origin of the name of the Cape of God's Mercie. Old-time explorers had no doubt, as we, good cause to name it so.



The Bayeskimo in sinking condition as seen by the survivors shortly after they had abandoned ship



The crew of the Bayeskimo settle down to make themselves comfortable and to await their rescue. Overhead, billowing out to sea, is the smoke of the fires from deerskins soaked in petrol to guide the rescue ship.



(ABOVE) A view from the rescuing Nascopi of the boats which collected the survivors. (BELOW) The survivors pile into the boats.



Chosen Character...

By Ronald Farquharson (I.C.I. Shipping Manager)

SOME little time ago there appeared in the *Magazine* an account of a journey which I took, twenty years ago, up the Yalu River—the rather treacherous waterway which divides China from Korea. In the course of that article I related how the little craft in which we travelled was halted each evening as a precaution against attack by Chinese bandits who infested that area and would particularly have welcomed the opportunity of holding a Britisher to ransom.

In the light of more contemporary events it seems strange to reflect how, with a view to safeguarding ourselves, we assiduously avoided the southernmost stretch of Manchuria (comprising China's three Eastern Provinces) and slept the nights, less perilously, ashore in the peaceful villages of North Korea! That, however, is by the way.

What I have more immediately in mind to relate is the memory of an unforgettable character under whose ramshackle roof one of those evenings was spent. By trade he was a native innkeeper, though obviously he was scholar and philosopher as well, and in all, a Korean of seemingly ripe antiquity. His name, as far as I remember it, was something akin to "Ko-Ko," though nothing quite like him was ever conceived by Gilbert. He was elegantly clad, according to the custom of his country, in a flowing off-white gown, while his venerable head remained steadfastly topped by "one of those hats." In Korea, as in China, white (or off-white) apparel is the symbol of mourning, but the people of Chosen (the alternative name for Korea) pay respect to their departed menfolk for periods so prolonged as to make it quite uneconomic ever to wear anything else. Gaiety is portrayed in a gentleman's hat, which is black and fashioned in the style of that worn by the Ladies of Llangollen, or, for the benefit of those who don't know, by airborne witches astride broomsticks.

I must confess that I have seen more expensive and fanciful models (of what Mr. "Ko-Ko" favoured in millinery) adorning the heads of the modern girl; but *not* in Korea. Oh, no! In that country the heads of women are not for adornment: they are reserved for the more practical purpose of bearing burdens. In fact, on both sides of the 38th parallel the ladies of Korea are of such little account, save as chattels, that their departure from life doesn't call for any mourning at all. Let that, however, be as it may.

Mr. "Ko-Ko," long and gaunt, appeared the more venerable



by the embellishment of a thin white beard which, though it emanated solely from the point of his chin, trickled down, like a miniature waterfall, to about the level of his waist. While not patiently engaged in broadening my knowledge of local affairs he sucked contentedly away at an empty pipe, which had a yard-long stem and a bowl the size of a thimble. It was he who sought the exchanges, and having tried me first in his native tongue, and secondly in that of his contemporary overlords—the Japanese—with no better effect, we eventually settled down to a discussion in somewhat halting terms of Mandarin. This neutral language was occasionally enlivened on his part by rather startling excursions into the idiom of England; and though he denied it, I fancy that "Mine-Host-in-the-Hat" had a knowledge of English far in excess of the best of my efforts in Mandarin. None the less I have always considered he was essentially sincere in the beliefs he expressed, which, not unnaturally, have returned to my mind during the course of current events.

When I asked him, for instance, how he and his fellow Koreans reacted to the gentlemen of Japan (who had quietly annexed his country some twenty years earlier) his reply was surprisingly mild. It was to the effect that the Koreans were essentially—and had always been—a peace-loving people and

they therefore accepted the imperialist domination in a philosophical and untroublesome way.

"Since we despise the 'little men from the Island Empire,' " he said, "we pretend not to see them at all."

"I suppose," I put in, "they have their uses: for instance, they keep law and order to a degree that is good."

"Good?" he exclaimed in Chinese; then, having sucked away for a spell at this empty pipe, he added, as though for my edification in English: "Bloody good!"

I recovered my composure, and, presuming to have heard him aright, I then suggested that he was obviously well enough placed to continue our exchanges in my own rather than a neutral tongue. Mr. "Ko-Ko" replied (in Mandarin) that his ignorance of the language employed by the British imperialists was equivalent to his distaste for that used by the imperialists from Japan. He went on to explain that, through a limited association with representatives of both island races, he had heard the expressions they employed and it was inevitable that certain among them should stick!

I said that I understood. Then, "Imperialism," I suggested, "is, to you, an unsavoury thing."

"Aggressive imperialism, yes," he agreed; "but," he added, "you must never overlook the other sort—my sort. Remember, please, that I too am an imperialist."

"Are you?" I asked in mild surprise. "And how long have you been an imperialist?"

"For five hundred years," came the immediate reply. Then, somewhat appropriately but quite solemnly, he added in English: "Great snakes!"

I let that pass and taxed him about his five hundred years of personal imperialism.

"It was under our great emperor Li Tan," he explained.

Apologising if, perchance, my history might be a little at fault, I said I thought that the great emperor Li Tan had died in the fourteenth century.

Old "Ko-Ko" shook his head, and "that hat," secured under his chin by a bootlace, echoed his emphatic denial. "He was *born* in your fourteenth century," the old man corrected me; "but he still lives." If I was tempted to enquire "And how is he keeping?" my levity was subdued by the profound sincerity with which the venerable Korean delivered his statement.

It was subsequently to dawn upon me that Li Tan had been the founder of "modern" Korea and that the social reforms which he introduced had steadfastly remained the pattern by which succeeding generations of his subjects lived. Lesser rulers had since come and departed and, except by the historians, their names had been long since forgotten: they were

dead. But Li Tan, through five hundred years, had remained a living legend in the hearts and minds of an unchanging, essentially simple people.

I understood now why old "Ko-Ko" proclaimed himself an imperialist. The pattern of his life was dominated by an emperor who had preferred tranquillity within his kingdom to the struggle for power beyond it. I supposed there were countless Koreans who lived, like him, in such a continuing state of spiritual peace, that they were unaffected by the fact that their country was being administered (and exploited) by aggressive imperialists from across the Sea of Japan.

"Supposing," I asked presently, "supposing Japan sets out to conquer the provinces of Manchuria—and it is firmly believed that she shortly will—and, aided by the arms of the West, the Chinese were to drive them out?"

"That would be *their* affair," he butted in. "It could never affect Korea. We have no quarrels within or without. Besides," he added sublimely, "we have neither navy nor army."

"So much is immaterial," I insisted. "Supposing," I went on, "that a victorious force from the north were to cross the Yalu River and drive the Japanese out of Korea. What then?"

The ancient sage, with the startling knowledge of English idiom, slowly removed his empty pipe and for a moment regarded me closely. Though it is twenty years since, I retain the clearest impression of his face as he said: "Such a thing could never be." But although he spoke with conviction, I seemed to detect that his normally serene but weather-beaten features had briefly clouded.

We were talking in terms of contemporary events, of course, and my questions had been prompted by the imminent threat of a full-scale attack by Japan on Manchuria. I was mindful, too, that in the event of such aggression China would appeal for League of Nations aid. Let us leave, however, the unhappy history of that affair and listen in terms of today to my "Wise One's" last remark. He who lived like a million others did, under the sway of an immortal emperor, slowly shook his head (and with it, of course, his hat) as though finally sure

he was infallible. Then out came his pipe once more.

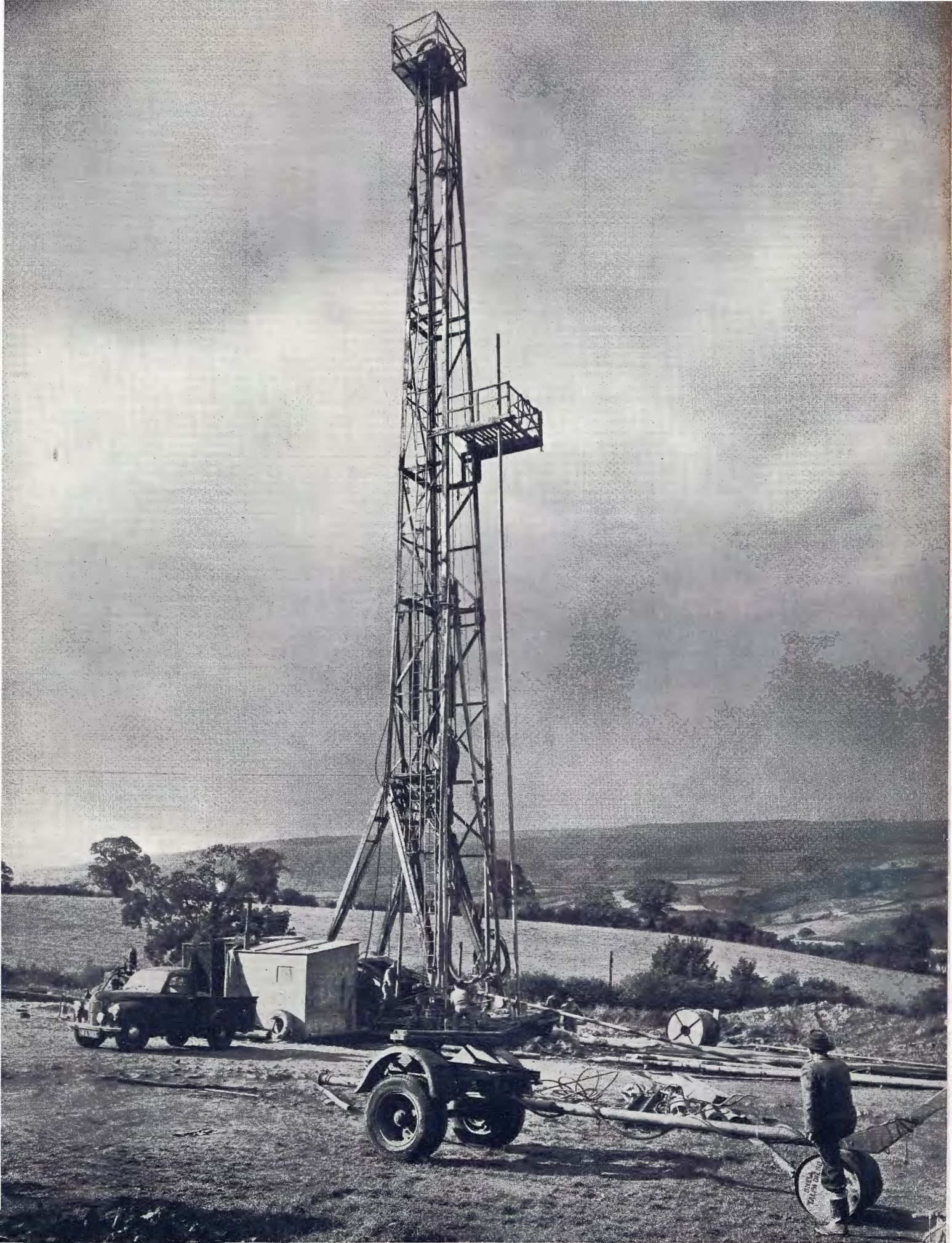
"Korea," he said with conviction, "*will never become a battlefield on which to settle the issues of others.*"

Then, as though it were needed, the emphasis was added in English: "By jingo, no!"

It but remains for me to express a purely personal hope. It is that for some time now this Chosen Character may have shared with his emperor that conception which is theirs of a sufficient—though hatless—heaven. For I can think of no conclusion more peaceful than freedom to roam at will about the sunlit hills of Enduring Concord.



"The pattern of his life was dominated by an emperor who had preferred tranquillity"



Prospecting for potash in Yorkshire

The December issue of the *Magazine* was already printing when the grievous news was announced of the death of Sir Frederick Bain. The article which will be found on page 376 was only completed by him in the early hours of the day of his accident and contains therefore some of the last lines which Sir Frederick can ever have written.
